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# WEATHERANDCROPS

Publication of the Illinois State Weather Service

Vol. II.

Chicago, Illinois, January 10, 1896.

No. 1.

## The Month of December.

The month of December was noticeable for its large rainfall; the period from the 16th to 20th giving by far the greatest fall of rain during any like period in December since records have been kept in the State, and raising the total for the month over two inches and a quarter above the normal. The fall of the past month very materially adds to the total for the year and at many stations raised the total to or above the normal. It is especially noteworthy that this heavy rain came with a thaw which took the frost from the ground and permitted the rain to be absorbed, thus preventing damaging overflows and wetting the soil thoroughly. The 23d to 25th continued the rain and, with the heavy snow over the southern and east central section on the 30th, ended one of the wettest months of '95, a year which, however, was lacking in The greatest fall recorded was 8.08 wet months. inches at Springfield, and the least 1.41 at Lanark. Excessive precipitation (over 2.50 inches in 24 hours) is reported as follows: Aurora 2.83, Chicago 2.66, Glenwood 2.50, Joliet 2.99, Oswego 2.85, Alexander 2.86, Altamont 2.58, Carlinville 2.75, Carrollton 3.26, Decatur 2.85, Griggsville 3.00, Hannibal 2.70, Havana 2.82, Lexington 2.55, Mt. Pulaski 3.00, Palmyra, Mo., 3.60, Peoria 2.60, Rushville 2.74, Springfield 3.67; Mascoutah, 3.30; St. Charles, Mo., 2.77.

The first half of the month was cold, but the great warmth of the last half raised the average until the month ended 2.8° above the normal. Within the State a maximum temperature of 70° was recorded at Mt. Vernon on the 24th, while just across the Ohio in Tennessee the temperature touched 77° on the same day. The minimum for the month was 8° below zero recorded at Ashton on the 3d and 5th, at Chemung on the 3d, and at Oswego on the 5th. These two dates gave the lowest temperature generally over the State.

Sunshine was largely deficient; in fact, the month was a very cloudy one. Fifteen days were entirely overcast and nine additional partly so, while but seven gave clear sunshine. Rain or snow fell in measurable quantities on ten days, the storms being most of a general character and covering the entire State. Although very late in the season for thunder

storms three dates are distinctly noted when they occurred over a considerable territory, viz., 16 17th and 24th.

The pressure of the atmosphere shows an average of 30.04 inches, with highest, 30.49 inches, at Galva and Hannibal on the 9th, and lowest, 29.27 inches, at Keokuk on the 24th.

The wind movement reached an average velocity of 11.7 miles, and a maximum velocity of 54 miles from the northeast at Chicago on the 11th. The prevailing direction was south, although the northwest direction was frequently recorded. The average snowfall for the State was 5.3 inches, with nearly an inch on the ground on the 15th and 2.5 inches at the close of the month, although this was really a covering of over five inches in the southern and east central sections.

### Annual Summary for 1895.

The year 1895, considered as a whole, was of normal temperature (the excess was but one-tenth of a degree) but was made up of extremes and marked departures. Thus February was deficient nearly ten degrees in temperature, and October over five degrees, while April was above the normal three degrees, June above nearly four degrees and September over five degrees. In extremes of temperature the year was also noticeable; temperatures were very low during the last third of January and first half of February, a minimum of -26° being recorded within the state, and the average temperature during this cold period was a fraction above 9°. On the other hand the spring, summer and early fall will long be remembered for their great heat periods, and a maximum of 107° was recorded.

Temperatures above 100° were recorded in the state in May, June, July, August and September; May 9th-10th, 29th-31st, June 1st to 11th, and Sept. 10th to 22d, were periods of great heat. June 3d was probably the warmest day of the year for the state as a whole, while February 8th was the coldest.

The rainfall was largely deficient, only three months during the year had more than the normal fall, while the remaining nine were deficient from .09 of an inch in January to 2.41 inches in February and 2.22 inches in October, the year closing with a deficiency of 6.16 inches. Snow fall was somewhat in excess owing to the heavy fall of snow during November, the average for the state was 30.7 inches.

The season without damaging frost was short, as severe frosts were general over the state from the 14th to 21st of May and began in the fall on the last day of September; a few localities reported frosts on the 1st, 24th and 27th but these were mostly of a very light character.

Sunshine, as in '94, was in excess. The average for the state gives 152 days free from clouds, 116 which were partly cloudy, and 97 which were entirely overcast. Therefore about one-fourth of the year only was wholly cloudy. Rain or snow fell on 82 days in measurable quantities, which is one day less than in 1894, and shows a continuation of the drouth conditions of that year.

The total wind movement for the year was 90,343 miles, an average hourly velocity of 10.4 miles. The prevailing direction was southwest, and the highest velocity was 64 miles from the southwest at Chicago on the 21st of January.

The mean air pressure was 30.05 inches, which was also the mean for the previous year; February, October and November were marked by high averages. The highest pressure recorded during the year was 30.77 inches at Keokuk on the 28th of January, and the lowest 29.13 inches at Springfield on the 25th of the same month.

As compared further with 1894 the year just ended was 2.2° cooler, and had 2.61 inches greater precipitation. It also proved a much more successful year to the farming communities, and closed with more moisture in the ground than it has contained at the close of any month during the past two years.

## Weather-Crop Bulletin.

FOR THE MONTH OF DECEMBER, 1895.

Winter grains and grasses are much improved by the heavy rains and warmth of the month of December; the ground is at last thoroughly soaked, as the rains came with the thawing weather and were largely absorbed. Snow covered the ground over the north half of the state up to the 16th and at the end of the month a good snowstorm gave protection to the depth of five to eight inches over the southern and eastern counties, and from one to three inches over the northeast. Corn is nearly all gathered, only in north and central counties is a small portion yet to be husked. Some little damage has resulted from the shock becoming too wet. Stock is generally in good condition; water and feed are plentiful. Little farm work is being done beyond feeding and the lightest marketing, although some little sod plowing was

done directly after the heavy rains. Roads are everywhere in poor condition from the bad cutting they received during the wet weather and from freezing very rough at the end of the month.

## NORTHERN SECTION.

Throughout the northern section from three to nine inches of snow protection was afforded winter grain and grass until the 16th-17th, when warm rains melted the snow and took the frost out of the ground, filling it with water. Cooler weather during the last week of the month again froze the ground and at the end of the month a very light snow covering protected grain in the northeast and east counties, decreasing to a trace in central and west and to bare ground in northwest counties. Winter grain is in good condition, much improved by the warmth and rain of the month. A little corn still remains to be husked, but fields have been unfavorable to enter. A little sod plowing was done after the rain period, but the land was generally too wet. Wells are refilled and the ground thoroughly soaked. Stock is doing well, although hay and straw are becoming scarce. Roadways are generally in very rough condition.

### CENTRAL SECTION.

In the central section more rain and snow fell than in the northern, and though the frost and snow disappeared under the warmth and rain of the middle of the month, snow again gave protection over the entire east half, increasing in depth to six inches in southeast counties, but dropping off to a trace or bare ground in the extreme west. The month as a whole was very favorable to winter grain and grasses, and wheat is in good condition, except in southeast counties where the stand was very thin and poor, and the early struggle against drouth still requires most favorable weather conditions. Little corn remains to be husked; some damage is reported from wet shocks, and along the Illinois river some damage was done by overflow, which, however, will prove a good fertilizer. Stock is doing well; feed is plentiful and water abundant, the ground thoroughly soaked. Roads were badly cut up during and after the rain period and have since frozen very rough. At the end of the month from one to three inches of frost is reported in the ground.

## SOUTHERN SECTION.

In the southern section winter grains and grasses are doing well, much improved by the abundance of moisture and the warm days which came with it. No snow covering was on the ground on the 15th and frost penetrated from one to two and a half inches, but at the end of the month the entire southern section was covered with snow from five to eight inches, which

fell on very lightly frozen ground. The supply of water and food being plentiful, stock is doing well. Corn is all gathered and little farm work is on hand. Roadways were quite badly cut up during the rain period, but are reported improved by the frost and later by the snow covering.

## The Weather Bureau.

For the fiscal year ended June 30, 1895, Congress appropriated \$878,438.84 to maintain the United States Weather Bureau. Expenses, however, were reduced while the efficiency of the service increased, so that there remains approximately a sum of \$55,000, which will ultimately be covered back into the Treasury of the United States out of the appropriated amount. During the same twelve months the Weather Bureau received for condemned property, sale of publications, and seacoast telegraph lines, and deposited in the Treasury of the United States, the additional sum of \$5,498.57, making a total to be covered in by this Bureau of something over \$60,000.

### FORECASTS.

Detailed statements as to forecasts published during the year in the different States and Territories of the Republic are contained in the annual report of the Chief of the Weather Bureau. That report also gives approximations of the value of property saved because of those forecasts, and declares that the warnings of cold waves alone secured from freezing more than \$2,275,000 worth of perishable agricultural products which otherwise would have been lost. It is proved by the report of the Chief of the Weather Bureau that the degree of accuracy in the forecast division thereof is steadily augmenting. It is now a duty, under orders from the Secretary of Agriculture to the Chief of the Weather Bureau, that reports be made on the first day of each month of all forecasts made for the previous thirty days, together with the percentages of their verification.

Thus every forecaster realizes that his work is to be reviewed at the close of each four weeks and his accuracy tested by mathematical computation and verification. This feature in the administration of the Weather Bureau has been adoped since Prof. Willis L. Moore was appointed Chief of the Weather Bureau and entered upon his duties, July 4, 1895. Since that date many reforms have been successfully instituted, and thus far the service continues to show marked and decided improvement as to its management and efficiency.

The present Chief of the Weather Bureau began his profession in an observer's station twenty years ago. He came up from the ranks of the intelligent and industrious workers. In 1894, at a competitive examination, which had been instituted by the Secretary

of Agriculture, for a \$2,500 professorship, the present Chief of the Weather Bureau was decided, after a severe contest and examination by Professors Harrington and Mendenhall and Maj. H. H. C. Dunwoody, of the Signal Corps of the Regular Army of the United States, to be entitled, by ability and acquirements, to the place. Thereupon, he was detailed to take charge of the Weather Bureau station at Chicago. He gave an entirely satisfactory and markedly useful service in that city. From there he was called to his present position. His success and promotion opens the way for advancement, through industry, skill and attainments, to every observer in the Bureau.

The possibilities of usefulness to agriculture, manufacture, and commerce are almost without limit in the increasing accuracy and capabilities of the Weather Bureau. The time is not probably very distant when its records, warnings and forecasts will be constantly in demand as evidence in the courts of justice and also by those purposing large investments in certain kinds of agricultural crops, in perishable fruits, in commercial ventures and in manufacturing plants. Weather Bureau forecasts in the not distant future will, no doubt, be consulted and awarded credibility just as thermometers, barometers and aerometers are to-day. The usefulness of the meteorological branch of the Service, wisely and economically administered, is beyond computation. The annual report of the present chief is replete with interesting and practical suggestions.—Report of the Secretary of Agriculture.

## The Force of Lightning.

A German professor had been investigating the energy developed by a lightning stroke. At Klausthal a lightning stroke struck the wooden post of a house and fused two nails four millimeters thick. Experiments made afterwards by Messrs. Siemens and Halske, of Berlin, showed that a current of 200 amperes and 20,000 volts was required to do this work in one second. This represents about 7,000 horse-power, and, taking the duration of the lightning as one-tenth of a second, the total power would be ten times as much.—Ex.

THE petrified forests of Arizona are at least 2,000 acres in extent. They are described as resembling "an immense logging camp with huge trunks thrown about." The largest of these trunks are ten feet in diameter, and, where they have been broken by the action of the weather or by human agency, they form a "mosaic of carnelian, agate, jasper, topaz, onyx and amethyst." Much of the petrified wood is shipped away, to be powdered as a substitute for emery, and the preservation of these unique forests by the Government is called for.

CHARACTER OF

## Guide for Making Local Weather Forecasts.

The following abstract from a paper by Prof. E. B. Garriott, of the Chicago Office, read before the Chicago Institute of Education in the rooms of the Board of Education, has been furnished the public schools of Chicago by request of the Institute of Education.

As the premonitory signs or symptoms of weather changes are very similar over the greater part of the United States, the following table has been prepared with a view of presenting in a form for ready reference certain instrumental signs and atmospheric indications of coming weather changes, which will be found to hold good, with slight modifications, for all localities east of the Rocky mountains:

BAROMETER. (Reduced to sea level).	(Direction.)	WEATHER INDICATED.
30.00 to 30.20 and steady.	w.	Fair, with slight changes in temperature for one to two days.
30.00 to 30.20 and rising rapidly.	W.	Fair and cooler, fol- lowed within three days by rain or snow, depend- ing upon the season.
30.00 to 30.20 and falling slowly.	S.	Warmer, with rain or snow within two days.
30.20, or above, and falling rapidly.	E. to S.	Warmer, with rain or snow within 36 hours.
30.20, or above, and rising rapidly.	W. to N.	Cold and clear, quickly followed by warmer, and rain or snow.
30.20, or above, and steady.	Variable.	No immediate change.
30.00, or below, and falling slowly,	S. to NE,	Rain or snow within 12 hours, that will continue at least a day or two.
30.00, or below, and falling rapidly.	S. to E.	Rain or snow with high wind, followed within two days by clearing, colder.
30.00, or below, and rising.	S. to W.	Clearing and colder within 12 hours.
29.80, or below, and falling rapidly.	S. to E.	Severe storm of wind and rain or snow within 12 hours.
29.80, or below, and falling rapidly.	E. to N.	Severe northeast gales, and heavy rain or snow. In winter, cold wave with- in 24 hours.
29.80, or below, and rising rapidly.	Going to W.	Clearing and colder within 12 hours.

Rapid changes in the barometer indicate marked and early changes in the weather.

## Observers' and Correspondents Notes.

AVERY:—Several light falls of snow during the month and heavy rains. Ground entirely bare since the 15th, and though without frost from 20th to 24th, has 6 to 8 inches at end of the month. Stock of all kinds in good condition. CATHERINE MCGOUGH.

RILEY:—Stock is still in good condition. Three inches of snow on 15th, none at end of the month, fall sown grain well protected to the 16th, but without since that date.

The total rainfall from 16th to 20th, 5 days, was 2.50 inches, which was the greatest amount at any one time, since Sept. 15, 1894, and the greatest in December in my 35 years record. The mean temper-

ature of the month was 2.5° above the normal for 35 years. The total precipitation was 1.10 inches above the normal; only in '63, '66, '73, '84, and '87 was there greater fall.

JOHN WEST JAMES.

TISKII.WA:—Nice winter weather, with good roads, but slippery, up to the 15th. About three inches of snow on the ground and probably three inches of frost in exposed places. The heavy rain from the 17th to 20th nearly all went into the ground, started tiles to running and filled shallow wells. Warmth continued until the 25th. Winter grain and stock doing well; roads very rough.

W. I. GREELEY.

PLANO:—Winter grain in good condition, also stock. Some plowing done after the heavy rains of the 17th to 20th; corn about all in crib. About nine inches of snow on 15th, but none at the end of the month.

H. STAHLLE.

GERMANTOWN:—The late rains have done much good, and wheat looks nice and green. Stock is in good condition. At the end of the month about five or six inches of snow covered the ground, and the soil was frozen slightly before it fell.

B. J. SCHLARMANN.

AURORA:—A peculiar phenomenon was noticed here on the morning of the 31st. About 9:30 A. M. very bright mock suns appeared, also a very bright rainbow describing an arc of about 90 degrees with convexity towards the sun. It had a radius of probably 10 degrees, the inner end of the radius being near the zenith. Its location was slightly southwest of the zenith when first observed, and it passed to the northwest, maintaining the same relation to the sun. The bow gradually disappeared about 10:30 A. M. The air, during the time the mock suns and bow were visible, contained a large quantity of little spicules of frost.

M. M. ROBBINS.

Lanark:—The year closed with bare ground, and frozen quite hard.

M. N. Wertz.

OSWEGO: —Mock sun north of the sun on the 31st, and a rainbow appeared overhead. No frost in the ground during heavy rain period and it mostly went into the ground, wet the ground well and helped the water supply materially.

J. S. SEELY.

WINNEBAGO: —Snow protected winter grain and grass during the cold weather of the first part of the month. More water went into the ground during the month than in the three previous ones.

FRANK OSBORN.

HANANA: —Illinois River now stands 12.6 feet above low water-mark, having risen 9.3 feet since December 17th.

J. M. RUGGLES.

NEW BURNSIDE:—Two light earthquake shocks at 8:00 A. M. on the 31st.

GEO. HARRIS.

MARTINSVILLE: —Ground the wettest it has been for two years; wheat and rye growing finely.

J. B. SHEAPLEY.

Springfield:—The total rainfall recorded at this station from 8:23 p. m. of the 17th to 7:25 A. m. of the 20th was 6.69 inches. This precipitation exceeds the total fall for December, previous to the past month, since this station was established; the only month which approaches it was that of 1884, when 5.19 inches fell during the entire month.

JOHN CRAIG.

FREDERICK:—December was very favorable for growing wheat which is now in prime condition for winter. First half of the month favorable for husking corn and remainder of the crop was about gathered; last half not fit for field work or hauling. Roads last two weeks of the month almost impassable, now frozen up very rough. E. HINDERER.

ROBINSON:—Wheat sown early on ground plowed early and well pulverized is in fair condition, only very small in growth; but the largest part of the crop here is too thin on the ground and of feeble growth from drouth. The weather has been very favorable since the 15th for our wheat and grasses, and at the end of the month the ground is covered with snow. All the rains we have had were gentle and were absorbed, but little reaching the streams. This has done the greatest possible good, except to make very bad roads.

A. P. WOODWORTH.

Loam:—About one-fourth of the corn remains in the fields; shocks are very dark and in bad condition from wet. Water plentiful in wells and streams. Wheat and rye were greatly improved by the heavy rains.

H. C. FOSTER.

SMITHFIELD:—Condition of winter grain is good, stock also. The ground has frozen the past few days and roads are almost impassable. J. A. JOHNSON.

GOLCONDA:—Light but distinct earthquake shock felt at 9:30 P. M. of the 8th, also again at 9:30 A. M. of the 31st.

T. J. TROVILLIAN.

LOUISVILLE:—December was cloudy and wet, with a great deal of mud. It was favorable for wheat, which made some growth during the warm weather. Many chinch bugs were probably destroyed.

BELFORD A. JENKINS.

MCLEANBORO: —The heaviest snowstorm for several years on the 30th. It began about I A. M. and continued the greater part of the day,—will average about 7 inches of snow.

JOHN JUDD.

IRON:—The first week in December was hard on wheat, a great deal of complaint of freezing; the second was about the same; the third was showery and warm and put new life into grain.

W. F. HOSKINS.

## Miscellaneous Data.

Auroras: -- Ashton, 7th; Lanark, 7th.

SLEET:—Ashton 11th; Cambridge 23d; Cazenovia 1st; Lanark 20th; Monmouth 22, 24th; Scales Mound 19th; Winnebago 19, 20th; Zion 11th; Loami 1st; Golconda 20th; Gordonville, Mo. 20th; Louisville 1st; New Burnside 20th; St. Louis 7th.

Fog:—Ashton 18, 20, 21st; Cambridge 20, 21st; Cazenovia 18, 19th; Chemung 15th; Chicago 18, 19, 20, 24th; Davenport 24th; Lanark 20, 21, 24th; Ottawa 18, 19th; Scales Mound, 15, 16, 17, 18, 21, 22, 24th; Walnut 20, 21st; Bushnell 21st; Hannibal 24th; Keokuk 9, 16, 21st, Loami 17, 18. 23d; St. Louis 23, 24th.

Lunar Halos:—Ashton 23, 30th; Aurora 29th; Chicago 23, 29th; Davenport 23d; Lanark 7, 26, 29th; Oswego 25, 29th; Ottawa 25th; Reynolds 23d; Riley 5, 23, 29th; Scales Mound 2, 5, 6, 8, 28, 30th; Sycamore 29th; Winnebago 5, 23d; Hannibal 26, 28, 29, 30th; Hillsboro 28th; Keokuk 29, 30th; Lexington 22, 25, 29th; Rushville 23, 25, 28, 30, 31st; Springfield 6, 28, 29th; Friends Grove 28th; New Burnside 30, 31st; St. Louis 7th.

Solar Halos:—Ashton 5, 6, 8, 14, 31st; Aurora 31st; Cambridge 15th; Chemung 28th; Chicago 22d; Galva 22d; Lanark 3, 26, 30, 31st; Riley 10, 15, 23d; Scales Mound 3, 5, 6, 10, 14th; Winnebago 5, 28, 29th; Atwood 6, 7, 10, 25, 26, 28th; Hannibal 7, 22, 28, 29th; Hillsboro 26th; Keokuk 7, 29th; Lexington 22d; Rushville 3d; Springfield 6, 28th; Golconda 8th.

THUNDERSTORMS:—Ashton 16-17th; Aurora 17th; Cazenovia 16-17th; Dixon 17th; Joliet 17th; LaGrange 17th; Minonk 16-17th; Oswego 17th, Ottawa 17th; Streator 16th; Sycamore 17th; Walnut 16th; Wheaton 17th; Atwood 17th; Bloomington 16th; Carlinville 19th; Hillsboro 17, 24th; Lexington 17th; Loami 24th; Morrisonville 24th; Mt. Pulaski 17th; Philo 17th; Rantoul 16th; Springfield 17th; Jordans Grove 19th; McLeanboro 18th; St. Louis 18th; Oak Ridge, Mo., 18, 24th.

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CHAS. E. LINNEY.
DIRECTOR, ILLINOIS WEATHER SERVICE.
EDITOR AND PUBLISHER.

WALTER S. PALMER,
OBSERVER WEATHER BUREAU, ASSISTANT.

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## Chicago, January, 1896.

TLTHOUGH a few days late in reaching our readers with this issue we have the pleasure of presenting to you the annual summary for 1895, in addition to the data for December. We have also four more pages for your approval or disapproval. Throughout the past year it has been our steadfast purpose to give to the State of Illinois every improvement which the means at our command would allow, and to make a steady but marked improvement in the State service work. We have met with most hearty co-operation from the people of the State. Our voluntary observers have made great improvement in their work, and we have nothing but good words to say for them. The people of the State generally have met us more than half way, and we have had many more requests for instruments and stations than we could supply.

THE success which has been attained in the introduction of the card forecasts on the railroads at Chicago has been marked. The Chicago and Rock Island; Lake Shore and Michigan Southern; Chicago, Milwaukee and St. Paul; Chicago, Burlington and Quincy; Chicago and Alton; The Wabash; Atchison, Topeka and Santa Fé; The Monon; Chicago and Eastern Illinois; Chicago and Erie, and Chicago and Northwestern railroads have thus far been enlisted in the work and over six hundred stations, within a radius of one hundred and fifty miles of Chicago, will receive the daily forecasts by the middle of the afternoon. The plans include the display of the forecast cards at the many depots along these lines of railroad, and people contemplating shipment of perishable goods or produce can thus secure reliable forecasts of the weather to guide them, through the generous co-operation of these roads. The benefits to the public will be large, and the roads are greatly to be commended for their hearty support in the matter.

THE constant need of more intimate acquaintance between the voluntary observers and the director of this Service is ever apparent. We have received many calls from observers who have been in Chicago during the past year and we wish to receive many more, but the prime necessity is to have a State gathering to which a large percentage of our voluntary observers can come and get acquainted with each other and the director, and learn more of the work they are engaged in. If it is possible such a gathering will be arranged for during the early fall of the year at some central point in the State.

WE had the pleasure of presenting to one hundred and seventy-five of our voluntary observers and weather-crop reporters a copy of the Annual Report of the Secretary of Agriculture. We should like very much to have given all a copy of this excellent report, but the allowance for distribution was far too few. The Weather Bureau makes an unusually good showing, while each of the several divisions and bureaus of the Department gives a report containing something of interest; that of the Bureau of Animal Industry being especially full of good figures and suggestions for growers and shippers.

The conditions which lead to the selection of the present Chief of the Weather Bureau are briefly discussed, and, being of great interest to the people of this State, since Professor Moore was so recently at the head of this Service, are given on another page of this issue.

A LONG with the resolutions suggested in another article it might be well to mention, also, that we will be glad to furnish forms for newspaper reports, either weekly or monthly.

THERE can be no question of the general poor quality of thermometers which do not have their degree marks etched on the glass tube. A thermometer made otherwise is on the "hit or miss" plan, and if it is correct at a few points on the scale, it is so largely by accident.

NEARLY every envelope which we opened in receiving the reports for December contained some greeting of the new year. It is impossible for us to answer all these individually, but we wish to acknowledge the pleasure which these expressions of our observers gave us, and to return to all wishes for a Happy New Year.

THE soil temperature observations for December, by Mr. Chas. A. Love, at Aurora, make the average temperature of the soil at 6 A. M. to be 32.0° and of the air at the same hour 23.8°. The lowest soil temperature recorded was 24° on the 31st, and the highest 44° on the 25th. On the morning of the 3d, with the air temperature at —6° the soil thermometer read 30° above zero.

BECAUSE the new year is distinguished from its predecessor by an additional day, and the fact that it is not followed by another leap year for eight years, is no reason to anticipate erratic weather. Father Time can choose some other method of celebrating, if he will. And yet it is probable that the "weather man" will receive as much censure as usually falls to his lot, as if he was still responsible "for having made the weather."

OR the year 1896 we should like to have our observers resolve:

To make a more perfect and correct record than ever before.

To improve their exposure of instruments, to conform, if possible, to that of the Weather Bureau.

To give their local papers and their community the benefit of their observations.

To learn more of meteorology and become an "authority on weather" in their community.

To write more extensive notes of the weather happenings of the month, the damage by storms, deaths by lightning, etc. To mail their forms at the earliest possible moment after the month is completed and to make a complete record for each month of the new year.

## The Future of Farms and Farming in the United States.

The farms of the United States, averaging 137 acres each, are valued at more that \$13,000,000,000. Those farms number four million five hundred and sixty-four thousand six hundred and forty-one\* (4,564,641), and their average value in the census of 1890 is \$2,909.

The farm family, including hired help, averages six persons. By their own labor, with an additional investment upon each farm of about \$200 in implements and \$800 more in domestic animals and sundries (making a total farm plant of \$4,000), those families made for themselves during the year out of the products of the earth, a wholesome and comfortable living.

The same farmers have with part of their surplus products also fed all the urban population of the United States, poor and rich alike. Cereals, meats, vegetables, fruits, eggs, milk, butter, cheese, and poultry have been supplied the village and city markets of the United States in abundance. It is probably safe to say that more than 40,000,000 of American citizens not living on farms have been so furnished with all the necessities and luxuries known as products of the varied soil and climate of the States and Territories of the Union.

During the fiscal year of 1895 the United States exported to foreign countries domestic commodities, merchandise, and products aggregating in value \$793.-000,000. The aggregate value of the agricultural products included in that sum was \$553,215,317. Of the total exports Europe received a valuation of \$628,-000,000, or 79 per cent of the whole.

Thus American agriculture, after feeding itself and all the towns, villages and cities of the United States, has also sold in the outside world's markets more than \$500,000,000 worth of products. So the farmers of the United States have furnished 69.68 per cent of the value of all the exports from their country during the year 1895.

But the large number of consumers, consisting not only of our own citizens, but of the citizens of all nations, have not been gratuitously fed, though their supplies have been constant and abundant. With sound money of the least fluctuating buying power—money on a parity with and convertible into gold the world over—American farmers have been remunerated for their products.

The exact amount paid for the products of agriculture consumed in the United States during the year is

<sup>\*</sup> The 1893 report of the Secretary of Agriculture erroneously stated the number of farms in the United States at 6,000,000.

Monthly Meteorological Hata for Hecember, 1895, Illinois State Weather Service,

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Medernon, Ind	Jefferson, Posey, Jackson, C3%	39.3	163	20	11	5-6	3.19	0.75	30	10.6	0	7.9	13	6	12	11	3	J.M. Lochwood, E.E. Thornton
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Olney (&)		37.8	60	19.22-24	7	3/	3.77	1.40	19	124	0	4.0	6	9	16	13	S. 37	Henry Armine Victor & Phi Uips Miss Clementine Jaks
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## Daily and Monthly Precipitation for December, 1895. Minois State Weather Service

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Minonk	05	12	10	05	7						7						1.66	1.39	.75	24		.02	15 .5	2			03				4.81	D.J.Strano
Oregon Oswego Oldawa	27			上												DR	42	200	2.00	.93			7 .2	8 /2			-	-			6.10	J.S. Seely
Olda wa	1/3	04 T	77	.02		-		7.			03	71				19	1.05	160	2.10	16	77	0/	1/ 3	1 10	-	<b>—</b>	<i>7</i>	T' .	04	_	5.77	Dr.J.O. Harris
Henrods, Rither Rock of the Control	1/8			02				27		7	113	2				7	28	1.00	2.00 2.10 1.08 1.09	22			7 .2 11 .3 23 .3 7 .2	7			7				6.10 5.77 31349 3.00 2.59 2.82	Thos Chewis John West James Josmer C. Porter Joseph Hipond R. Williams Roswell Tow
Scales Mound	.32		.02				•	7.	H	7	./0	7	$\vdash$	-		08	.35	2,2	70	08	06	-	124	9.08			-	-	-	-	2.59	Joseph Hinand
Streator	1.05	1	7	-				グ								m	100	1.07	1.00	.98	01		28 30	21				_	20		5.89 3.38	R. Williams
Teskylwa	17 17 07		/-	.03	1			4		-	.02					_	.17	95	131	53		- 1	03 .2 23 .01	71.10				07		01	3.89	
Walnut Wheaton	25	12	7	106	+	-		77	H		13						08	97	31	116	17	0/	.2.	2	-			7].	20	- 1	7.55	1 (1 (C. )*[11.66]**
Minnebago	30		7					Ĺ			24						103	25	.50	40	"/		37	i i				-	01		2.67	O.C. Mussir. W.H. Johnson. Frank Osborn. Boht. Weiralk.
Zion Averages.	18	02	.01	./2	7	.00	2	7	.00	7	94 02	7	.00	.00	7	.02	42	78	108 100 87 70 100 99 151 71 20 50 136	78	01	7	06 4	01.23	00	.00	01	02	02	72	5.78 2.07 1.58 4.18	Robb. Klicarabb.
Central Section.																		1		/			T	T								
	09	07		7				77			7'	.01											20 5	60	4						6.82	Geo. H. Hall.
Allanta Allamonte	60	20		./6	-				$\vdash$							-	./0	1.80	2.86 227 78 200	1.73	.06	-	26 3 59 72.2	122	4			-	04 80	$\dashv$	7,77 4,96 7,43 5,72 7,62 7,62 6,75 6,75 6,70 3,48 6,47 4,66	Geo. H. Hall.  A. W. Burt.  D. P. Buchhoa
Qhimaad (a)	.29	.05	.10		F						7	.05					20	200	200	100	./0		72.2	2			$\exists$	7.	<i>60</i> I	=	7.43	J.W.C.Gray
Alimand (b) Beardslown Blogmington	_	1	l														203	1.30	1.15 2.00	1.39	2	7 .	20 4	1.2	3				50		3.73 5.72	Richard Milner
Bloomington	13	15	.08	77		-		m			7	T				-17	2.10	201	1.92 2.5 2.75 7.26 1.55	03	7	-1	50 51	2	+-			03	=		7.62	Pro M J Elrod.
Carlinville Carrollion	30	15		.02							.03						7	2.33	2.75	7	10		8 6 28 .6	7.18					04		6.75	R.O. Purviance
Carrollion	77	02	-	.04	1-	-	-		Н		7	.06				-		2.10	145	7/12	14	- 1	28 .6	2 ./8	5 30		-		60	7'	470	Pro Clude Stone
Callin	2	15						777			.02					.43	/20	.60	50 1.75				28 3	2 10			77.	-4		77	3.48	C-Heiman.
Last Peoria	1/2	.08	.08	.08		-		7			.02					22	.63	1.3/	142	.20	.04	- 1	28 .8. 28 .3. 27 .7. 60	9	1				30	4	4.66	C.I. Farrington
	26	-	05	_	-	-	ı	-	-		.05			7'	$\mathcal{Z}$	.60	1.30	120	1.00	7	10	74	20 6	20	-	-	-	-	80		570	E.B.Schooley
El Madison lawa	.10	7	.05 7	49				7			l					$\mathcal{T}'$	38	1.05	<b>32</b> 5 2.15	.76	10	7	20.6:	9			//	10	20	m	5/74	Missle a mcCready
Gilman. Grallon		LUJ	7'	93				7'			10 97			(		.05	.30	2.00 2.03	2.00 185 3.00	150	7	7	3,3 .5. 7 .6.	7 33	3		$\dashv$		38	7	5,95 5,74 7,91 7,23 6,21 5,78	N. E. Michard  N. C. Grau  N. C. Mearts  Richard Milner  Milne
Grafferile Grafferile Handisa Ma		1/6		03	F	Η-,		7			7				7		7	200	3.00	20	27						$\dashv$	7		77	6.21	Emily R. Gray.
Mana wa	15	05	7	_	17				2		<u></u>	7	7'				1	1.46	270 283 178 98	32	08	_ "	24 . 7 12 . 7 12 . 3	4				<u></u>			0.00	Gen Jin Rugales
Hillshoro Keokuk lowa	46	27	7	.05	-	-	-	7,	-		7	7"		=		7	<u>.02</u> 74	1.70	1.78	32	01	7	$\frac{12}{12} \frac{17}{13}$	0.04		<b>.</b>	7	05	15	7	5.44	P. I. P. dwards Fred Z. G. ozewisch. X Frank Campbell. M. Sticklet
Learnation Linama	.50	.05			.03			_			.05						120	150	125 249 168 68	95			12	_					2/		5.65	Crank Campbell
Loams.	12	.07		05				7'			02				T		7	257	168	43	10		31 .6	17					06	7'	6.83 8.00	Mr Shick let.  J. B. Shean hea.  J. B. Shean hea.  J. B. Shean hea.  J. K. Mood.  J. J. Sheel.  J. Tred Brendel.  J. J. B. Clark.  J. B. Clark.  J. Saac Kibler.
Marlinsville	.96	30		$\vdash$	-				Н	_	07		_		_	7	15	142	68	.05	.02		10 0			-	-		54	-	4.30	J.B. Sheapley.
Morrisonville	.35	18		.05				7-			12 T						-/-	183	153	2	.02		CCIT		1			_	19		4.68	Karry Grundy
Mattinsville Mattoon Morrisonville Milakine	42	1/2		.03	-	-	-	7	Н		.05 T	05	_			7'	02	240	1.53 3.00 1.3 1.25 5.2 1.75	45	95		27.6 10 T	3 0	75	$\vdash$	-	-	19 10 75	-	3.36 4.68 7.42 3.69 6.42 3.05	John F. Templeton
Palmura Mo.	.12	02		.10				$\mathcal{T}$			7					7	.75	3.10	1.25	20	7"	7' .	15 .7	1	r	/3		T'		7	6,92	A.C. Sheel 2.
Phylo Phylo	24	02	.07													.07	14	2.60	1.75	.04	.09	- 1	68 2	3	1	./2	_	20				Dr. Fred Brendel
Philo	143	7		42	-	-		7	Н	_	.08	n				/2	30	141	125	15	7		22 4	9-	.08	$\vdash$	$\dashv$	201	55° 20	7	4.99	H.G. Burr
KOSE KILL	./0	17	.05					7			.05	_		7'	10	7	1/00	1.00	N25 100 100 274	7	4	/	20	1	.50			7	30	//	5.05	Isaac Kibler Prod. N.T. Vealch.
- Kushville	10	./0	.05	.05	-	-		11	-		.03	.01	-			7	.03	177	3 57	47	13		17 7. 23 6	27	+-		-	7	02		3.40 8.05	John Graig X
Spring) ield.	1.09	08		.0.3	.01						m				T		07	14	1.02	3/	07	7	27 4	4	.23		7	7	39 30		3.79 4.66	John Craig *
Tuscola Marsaw											_		777		-		00	1/3	1.15		27			1	1	0	,					J. H.Cox.
Southern Section.	21	07	01	CH	7	00	.00	7	7	T	.02	.01	7.	7	1	47	09	1/3	1.79	.50	.03	4	29.4	3.70	109	1		0/	20	/	5.72	
Albian.	72	77		10							105							30	7	15			48		40				60		201	B.P. Michels.
Laura.		2	7'	.02	7			.03				.02			.76	.06	.01	7	7 /2	60	02		13.0	7.07	21				25	2	2.81 3.25 3.64	1 M.T. Blutche. X
Lisne Duquoin	.60	7	$\vdash$	.92	-				-		.05	7					./5 /5	.58	60 56	190	1/5	-	18 8	2 2	38			-	57 70		3.64 5.69	I W. H. MTC. L.
Flora		-									00				773	m	-		10	7"					1				_			John Forester.
Friends Grove	162	7	./g.	02					Н		/	05			.04	08	02	7	.19 175 140	32			12 0 24 7 15 3	.01	1.43				50	-	2.06 3.46	THE THI MANES
Golconda Gordonnille Ma	82	7	19.	7	F	F					20	30			.09	7	04	150	175	15	03	T	15 3	2	1/2	H			43 70	7	3.46 4.57 3.45	I. M. Bean
Herrins Prairie	LOO	.10	.05	10							-0	.05				_	V.11V.			150		1.4	3 <i>0</i> 1	1	1.60			.80	10		3.70 3.40	D. B. Harrison
Jordans Grove	94		7	.02		-			H	-	.05	02.				.05	.01	26	248	06		-	30 .O.	7 1/2	60			80	60	2	3.40 5.45	W.J.S.Colb.carl
Liouisville.	78	1 7"		$\mathcal{I}$							.04	7			7		22	67	.53	36		1	10 2	7	.40				40	7	377	Bayenkins
mascondada 1	73	7		.60							.02	.02			.10	12	.03	34	248 .53 .10 28	03			16 7	-	.05				60 43	2	2.85	John Judd.
in tarmel	70	.70	7	05 T	F						.10	7			.02	.02	.11	25	28 02 03 93 22 140 06	11	05		16 0	6 64	120	$\vdash$	7		80 50	.20	3.55	Mrs. H. M. Philips.
Mil Vernon Ind	54	53	7'	.02	-						12/	7					.27	120	.03	//	.05		15 3 30 12 1	23	55				75	.05	3.19 3.19 3.56	J.M. Lock wood
Mill letter ind.  Mill letter	169	20	1 1	.01		-	7'				.04	.01			7	92	7'	.13	22	07	_	-	12 /	1.20	,35		$\exists$	40	20 44	7	2.05	1 Caamaa Mannia
Oak Ridge, Ma	20	20		92		1				_	1.02	7			7	19	15	45	1.40	15	$\exists$	7.	20.3	5.10	.05			.60			2.05 3.77 347	Menry Bruint Victor T. Philips MissClemantine Fahs
Olner (d)	44	08									02	.0/		7		4	20	130	12				15 /	5 .3	3				55 42	1	3.85	Missilemantinofahs
Paducah Ku	86	1				-			-		.03	00			14	.02	20 T 02	-	155	22	37	07	15 ./. 15 25 ./.	4 9	35	08	1		80 35		2.64 451	W Borneman
	43	24		.07							.06	.02					, class	169	2.77	29	7		19	2	18	-Va			- 1	04	6.32	1. C. Sangar
St. John. 1		.04	27	01	7	-		7		-	.04	7		, ,		7	4	157	277 101 149 -68	14	.05	7	28 2 14 5 15 2 17 4	0.60	1-			7	50 16	7	336 466	Br H C Franken Lett X
Uincennes Ind.	15	52				-	77	7	20	00			0.0	7	.02	01	/2	1.0	10	53	13	77	15 2	003	4/8	34.	38	10	50 46	.01	3.27	JT me Jimoby
State averages.	32	04	01	05	7	.00	7	7	7	7	.04	.01	T			.03	.33	1.14	.60 /.36	45	.03	7	17 4	0.00	00	7	7	.04	21	7	4.72	
	- M 60					E							_										her								11/1	

annual Mereorological Summary for

					$\alpha$	nn	15 5	at	. Ju	lere	zor	ol	ogi	cal	2	ur	nin	arz	1	501	•				
Place of O	haervarion	Ja	712	103	cu.	Je	. bi	ru	ary,	J.	lar	ret	۷.	a	ar	il.		J	710				Tui	74.	DECOURT.
					1 4	§		T	É	S.			Ę	Š			9	5		23.4	r,	S.			P.
		Tream Temperature,	15	1,0	Tota? Presipitation	7 2	1,5	1.5	يْد ا	2	12	ته	2014	Tempemen	- 4s <sup>2</sup>	15	~ 2	1 1	45	7	~ 48	r atta	2	1	~ =====================================
Station	County,	Meran	3	3	B. ta	Mean Iemberary	3	6	5.5	4 2 2	8	3.	Total Presiding	ea	3	6.0	1. 6	3 3	3	9	Tora?	es de	3	3	Tora?
,	ريم.	EE	0	10	H 3	T &	97	Lion	H Se	Temper Temper	Nigh	2	700	24	161	0	Presi	The	Righ	0	H 3	FE	03	2	100
		H	Nigh	7	Æ	14	A19	H	1 . E	马只	K	म	ું ઈ	H	2/29	Z	2	, 14	He	7	€	K	1	N	4
Handhanr	Section.	1					-			7														1	_
ashton.	I e e / *_	1					Ļ	_		27.0		R	0,65	469		28	0 N-2	606	41	28	215	724	96	07	074
Canada Canada	Nane.	157	48	-/6	155	178	62	-/9	0.30	365	84	9	1.14	53.4	86	-30	123	642	90	32	242	73.2	94	53	140
Chemung, Chicago, Clear Creek,	Henry, 1*	129	51	-18	155	17.0	61	-15	1.60	31.7	80	78.89	1.32	495	83	28	0.86	592	95	32	199	73.8	96	50	1.79
Clear Creek.	Cook, Putnam,	18.7	123	-/6	1.00	133	61	-21	0.20	322 365 304 31,7 368 338	84	2	1.08	534	89	22	202	606 599 642 6/2 592 638 623	97	24	5.79	70.8 73.9 70.2 75.6 72.9	193	46	139
Cordova	Clinton, Rock Valana,	1.524	.624	-/9	1.89	152	64	-20	0.34	346 328 305 315	82	6	1.28		87	20	0.39	626	90	34	226		640		~ 2.2
Acremport, Ja,	Jeer, ·	13.8	49	-/5	122	14.1	62	-2/	0.43	328	84	6	1.57	539	88	29	0.32	626	92	37	446	731 740 727 697 736 736 736	97	45	1.62
Hubugue, No.	Hubugue,			-12	2.61	13.6	49	-/6	0.32	31.5	79	6	0.40	450	0/	26	200	074	92	29	3.70	697	95	40	260
Galva Qlennood,	Henry, Coox, /X Will,	139	.621	-11,	3.00	15.4	48	-18	0.19	1 .3.3 X	100	9	1.50	503	79	28	0.01					736	99	70	057
Kan Ko Kee (Hospital)	Janka Kee 5%	17.2	55	-9	1.00	141	50	-17	0.67	34.1	77	12	1.02	500	37	26	1.92 281 3.61	60.6	89	34	195	714	92	41	1.11
Inoxville. La Grange	Cook.	17.5	52	-/6	1.64	16.4	62	-16	0.39	340		9	0.85	53,1 474	82	26	1.17	598	92	29	3.62	743	96	43	126
Lanark, Alenmouth	Carroll, /*	17.4		-15	1.42				0.18	-	84		0.84	53./	91	26	2.53	628	91	20	204	706	93	54	2.97
Oregon,	Mendall, 1%	13.1	46	-19	1.35	135	60	-24	0.95	322	78	10,	135	480	80	28	1.69	628 64.0 59.2	94	27	3.36	71.6	29	41	1.64
Ottano, Riley, Rockford,	Hasalle, /	17.4	52	-/2	1.22	17.3	64	-20	0.70	33.8	73	3	1.32	524	92	22	202	590	99	29	1.06	748			1.02
Rockford,	Winnebago, / La Salle	143	48	-15	226	14.1	65	-22	0.93	3/1	193	4	2.53	493	88	28	1.51	60.3	94	29	354 0.80	740	97	51	1.99
Streator, Sycamore, Tyskilwa,	Heralb, 1%	15.1	44	-12	1.35	15.7	59	-18	0.30	37.7	78	16	1.03	124 486 493 534 489	13	29	1.24	59.6	89	12	252	406	91	50	33.0
Walnut, Walnut, Wheaton,	292240021	15.8	51	-14	1.92	15.8	64	-20	0.05	359	85	9	0.86	564	94			58,0	95	29	2.52	740	97	47	0.70
_UIIme bano.	Winnebago.	/3./	145	-16	1.42	15.8	59		0.39		81	4	1.90	50.1	80	28	0.70					708 740 752 706 740 716 710 701 726	94	44	1.59
Zion,	Carrell. Carrell. Carrell. Carrell.	105.4	48	-10	1.63	15.3	60	-20	0.29	341	72	6	1.68	50.1	86	26	018	61.2	93	30	407	725	92	45	189
Central	Section,						1																1		
Alexander Altamont	Morgan, Essitigham, sx									-					88	36	1.05	632	95	28	177	750	98	59	2.34
atlanta, atwood,	Pi5++ 3%	756	50	-/0	0.93	134	64	-22	1.45	351		10	0.72	48.6			3.53	694			0.78	699			234
Beardstonn	Coop	1	1		1.45			1	1008		8.5		090	)			2.90		98	2/	2.13			-	2.28
Alconington Austriell,	McLeon, McCoupin, McCoupin,	186	32	-12	1.62	17.7	64	-22	0,26	372 310 414 376	85	10	0.69	550	89	25	354	64.1	94	3/	1.13 282 1.42 201	757	98	49	194
Carlinville,	Green,	23.8	45	-8	7.08	20.3	64	-15	0.09	37.6	83	11	1.88	224	P5	32	26/	63.2	91	32	201	750	96	02	3.16
Coorsburg,	Green. Vermillion, Qdanis,															_					1.3-3	773	94		214
Castivoria	Tazenell.	18.0	55	-10 -14	1.68	17.3	69	-20	0.10	40.4	84	96	1.11	533	87	29	275	660			1./3	720	100	49	1.31
Affingham,	Gfsingham,	20.6	48	- 9 -/2	0.74	215	69	-18	0.90	400	84	14	1.65	57.9	93	32	245 290 322	6-39	48	321		1776	JAn 1	56	2.79
Trederick,	Vriorio 3									36.6			0.63	562				67.4	92	30	1.35	76.6	102		2.70
Graften. Grigosville, Hanni bal, Illon	Jersey, Pike	219	60	-/0	0.87	2.07	68	-20	0.22	1		9	1.58	f 1		- 1	2.35	-		1	2.59	746		52	3.94
Honnibal, Illon	Marion,	21.0	62	-/0	1.36	20.2	65	-18	0.32	399	84	13	1.77	56.1	87	32	2.68	634	10	36	1. 2.3	736	92	50	3.92
Hillstoro, Keokuk, Ja,	Montgomery, 1%	191			1.44	188	68			-	84	8	1.05	$\overline{}$		_	338	67.0	99	34	1.51	78/	101	62	247
La Harpe, Lexington,	Hancock, 1%	103	1 1		123				0.21		$\vdash$	/2	1.06				3.42	634	92	281	1.40	733 742 743	92	48	3./3
Loanti.	Samaaman	7.0	-			77.7	-	14		00.0	-	7.00	7.00	0.2.0			2,85	05.4	7-0	-	225	123	70	00	430
Horisiana, Illo,	Raits, Clark,	226	54	-4	206	204	64	-18	0.60	40.0	Fo.	16	1.20	554	88	27	3.43	63.8	93	28	1.10	75.0	98	46	154
Hottoon, Hit Puloski	Ligorn.	263	38	-9	1.25	182	65	-20	1.14	40.0 437 39.2	83	10	201	54.2	90	29	2.36	645	95	-30	132	75.2	99	51	2.84
Polestine Polmyra, Ma,	Marlen, 5x	23.6			1.02	2.3.0	63	77	0.63	40.8	86	17	1.65	55.6	90	30	3.65	676	95	30	5.70	784	1741	0.71	70.5
Paris Ceoria	Gagar.	209	20		1.32	20.2	68	-20	0.37	37.7	86	14	1,02	33.7	76	25	2.89	6.4	95	39	1.84	752	100	如	22/
Philo, Montoul,	Champaign, J.	20.3	57	-16	1.34	17.8	67	-20	0.66	379	82	10	0.47	573	PG	26	238	65.0	97	34	1.41	77.7	100	56	340
Rosetill.	Vaster,	1		-9	1.75	20.1	69			40.1	87	/0	703	67.0	01	.20	0 50	7.50		2.0	930	~	96	52	3 FP
Springfield, Terre Haute Ind,	Vasper, Schuyler, Sangamon, Vigo,	21.8	60	-10 -9	226	19.6	65	-20	0.46	39.4	84	12	1.61	549	88	29	2,49	660	92	34	3.32 200	77.5	95	53	3.49
Tuscola,	Houglas, 1%	21.5	54	-9	1.38	189	66	-18	0.68	39.4	83	12	1.39	5312	88	32	2,13	64.1	94	32	201	754	99	57	360
Southern	Section.									1															
albion,	Garara.	26,3	40	-9	4.25	24.0	67	-15	0.15	430	83	18	1.45	SAP	88	3/	209	64.7	94	32	1.07	76.8	99	52	4.67
Carlyle,	Alexander, Clinton,	255	60	2	230	254	14	7	1.06	46.9	0.7	2.0	1.97	40.5	0.	3"	206	/ 0	0.	70	315	77.2	70	1	1.90
Carlyle,  Enlyle,  Hu Quain, Golconda, Gordonyille,  Greenville,	Perry, /* Cape Girardeau 3%	3/1.8	45	-2	3.79	29.1	73	-11	0.31	48.7 52.2 44.2 40.4 44.8 45.7	R-8	22	3.76	614	84	36	271	67.8	89	40	1.56	783	95	60	444
Greenville Mo.	Cabe Girardeau 3% Bond Williamson, / X	224	64	-8	1.93	208	3	71	0.49	40,4	76 F5	23	266	57.8	92	33	3.19	64.0	95	37	3.16	742	-99	25	2.64
Vordons Grove	Williamson, 1 %.	27.4	60	7era -4	1.50	254	73	-/2	0.45	44.8	82	18	2.53	540	80	34	1.00	649	91	35	3.08	737	95	53	3.54
McLean boro	Clay, Hamilton, 3%	26.7	59	-8	3.46	226	63	-/7	0.16	39.0	8-3	17	1.63	56.4	87	38	1.84	643	92	3/	799	748	96	50	762
J11090021707	StClair, 5*	24.0	37	-6	390	226	66	-16	1.76	45./ 42.9 39.0 41.5	85	16	2.19	54.8	94	32	2.10	243	95	3-3	3.20	77.5	101	40	210
Mt Vernel,	Posey,					-	-	-	-	-	81		298	58.4	87	35	2./0	650	92	36	1.51	78.2	97	57	279
Muday Valley,	Jefferson, 3%	24.8	56	~3	280	220	7/	-9	1.20	403	8-1	22	279	589	87	39	2/3	66.7	92	43	1.89	770	198	68	298
Men Burnaide, Oak Riage Mo., Olney Q	Caredirardeast*	296	66	-4	3,30	26.0	46	-//	0.79	448	77	20	3.05	59.6	92	37	270	663	86	4/3	085	722	99	56	650
Olner (b)	Richland, /*	2/8	52	-70	4.64	187	66	-/8	0.45	38,5	90	1/3	0,93	534	90	21	434	63.4	102	34	215	262	107	56	3.14
Stcharles, Ho.	Archarles,	245	67	-8	120	29.5	25	-14	1./2	43.	85	14	1.24	57.0	88	36	0,52	68.0	90	35	363	74.9	94	37	279
Stronn	StLonia,	26.0	64	-8	1.65	251	70	-/2	0.43	44.1	85	15	282	59.8	86	30	2/2	66.6	94	44	3.16	767	98	60	2 446
Vincennes, Ind.	Anox, averages	255	60	-11	3.30	20.5	69	-/6	0.62	441	P3	18	238	587	89	35	303	66.0	99	36	1.85	780	103	56	3.60
	Northern Central,	154	48	-14	1.63	16.3	60	-20	0.56	38.7	81	6	1.08	500	86	30	1.24	612	93	30	288	725	97	47	284
For the States	Southern, Querages	37.7	60	- 5	330	25./	69	-/3	0.62	1441	83	19	238	58.7	89	35	228	65.6	93	36	224	76.4	98	56	3.60
	Mormal.	237	7	-70	2.25	294	-	-	3.01	37.6			278	5/8	-		3.55	61.8	Ť		436	71.0	1		466
Mare Unless othern	Henortures, ties indicated the Lonest from Obs	Mear	2,31	egh	est are	Lion	est	Te	m per	atur	es (	are	- Fro	m Ji	axi	mu	m and	Min	init	ım	The	rmor	nete	119,	7.62 2.10 1.12 2.79 1.24 2.24 4.10 3.00 3.14 4.02 3.14 4.02 3.00 1.42 3.61 2.44 2.77 4.62 4.62 4.62 4.62 4.62 4.62 4.62 4.62
8. b. 8. 4. e. e. t.	Jumber of Days II	712817	20	rdi	ngs.	2.511	an.		peral	ures	Seo m	8a	835	2,3	£	an.	TCM !	2. 940 W	7 C	+60	+2;	, /21	×p =	Z.	
									~																

MINONK: —The night of December 24th we had a high wind which blew down standing corn, making

it difficult husking. There is considerable corn to be gathered yet in this county. O. M. DAVISON.

1895, of the Illinois State Weather Service,

		189	3,			-		-	-	_	_	vea												
July.	a	ug	ust	$S_{1}$	pre	mb	er	<u> </u>	to	be	<u>r,</u>	Nov	em	be	r.	He	cen	700	er.	For	the	y	ear.	
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kerat head tal	2 2 2	16.0	2 2	2 0 3	3	4 65	429	Hean	3	3	200	Mean Temperat	My hest	3	Tota?	23	Highes	(e.a	tor	22	te a	Lonest	pita	Observer,
He Tempe	Mea	High	H CH	Trecip	High	40 34	Preen	111	High	Low	Tot	em,	163	Lon	Z.o.	Temper	(63)	Low	Heeip	emp	Highes	0	1 3	
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													,,								ā/			Northern Section,
70.6 95 33 37	1 7/9	95	47 4	0 66	94	29	1.17	446	72	12	2.77	341	70	=2	541	27.2	25	- 7	2.89	46.6	99	-/9	31.86	Vra R. George, Hr. M.M. Robbins, & 19.7th ndall
73.0 96 48 50 70.2 92 00 2	7 742	99	44 3.	56 67	92	36	174	44.5	74	12	0.66	33.7	67	-3	2/0	27.1	50	-8 70m	259	466	99	-24	30.25	Joseph Hinhles,
702 92 00 24	9 741	98	42 2	70 44 47 49 49 49 48 48 48 48 48 48 48 48 48 48 48 48 48	97	3/	3.40	45.5	74	13	1.24	36.4	37	-2 3	2.75	27.5	57 55	-3 -/	516	46.6 492 466 471 489 47.9 487 47.5 48.6	105	-22	30.79	Central Office X. H.K. Smith Hr Lauke Roberts.
73.4 96 52 51	6 750	94	55 4	79 69 79 69 75 65 81 66 74 67	192	34	303	47.4	74	2.0	0.70	364	70	9	2.75	288	55	2	253	47.9 487 47.5 48.6 45.6 48.4	96	-20	24.78	AZimmerman,
74.4 98 40 3.0	74.4	95	53 1	75 65	93	34	2.06	47.6	75	16	0.82	350	3/	#	2./2	276	20	-2 xen	2.00	48.6	98	-21	19.74	J. Walz. & Custace Shaw, T.W. Ructe, &
727 99 49 5	10 774 2 734 4 783	95	49 2	74 67.	491	30	2.86	460	45	15	0.87	354 354 34.0	72	2	2.23	286			4.20	484		-23		Post Surgeon USO. Prof J. U.White. Cldr K. Holbrook.
72 / /00 47 H 3 6P 2 PP 3 / 2 3	2 737	100	41 2	45 68 70 61 67 54 69 69 67 61 67	92	3/	093	464	79	19	0.67	37.3	49	4	290	263	60		5.81	494	100	-14	27.06	
748 100 52 8.1	14 715	96	54 2	54 69	96	34	6.10	447	76	18	1.00	355	3/	-5"	17.51	300	1.5-61	240	5.13	473 498 471	100	-2/6	39.41	
714 99 41 43	72/	93	44 1.	61 66	93	34	4.26	43.0	72	/3	0.77	339	68	4	2.06	254 268 298	2%	5 /	4.81	49.2	99	-22	30.44	A.J. Strang.
70.5 97 45 36	171.6	96	52/ 5	0 66.0	91	24	059	426	72	12	1.05	33.7	67	2	4.63	264	49	-8	6.10	45.6	99	-26	30.4/	J.S. Seely.
702 96 45 3.4	13 718	93	50 3	74 665	96	30	2.16	436	70	18	041	327	68	/	269	282	J 31-	- 7 I	3.50	49.0	96	-23	25,50	Hosmer C. Porter
74.4 99 53 2.2.	00 76.2	93	50 31 50 3	60 72	7 93	33	190	473	73	15	1.00	361	68	-/1		27.0	58	Zero	5.89	47.4 59.1 46.1	102	-25	28.31	R.Williams
753 98 63 7	764	99	59 2:	8 66.0	91	36	444	43.7	78	2/	0.78	348	49	9	3.3/	28.3	54	tero	3.55	497	101	-20	25.80	Rosmen How.
719 96 45 3.4	7 73.8	94	52 4. 48 2	99 692	92	34 29	229	390	73	16	0.80	324	7/	<del>-</del> 6	307	256	54	-2 -5	207	46.2	96	-25		Frank Osborn.
72077 48 4.7	7 724 735	96	50 1.	79 672	95	32	2.51	442	71	15	0.86	34.4	70	4	3.16	28.1	22 -	-3 -2	4.18	47.6	185	-26	22.58	Robt M'Grath, Querages.
75.3 96 49 6.8	7/8	/00	20/	9 710	0~	23	200	50.2	~0	12	0.28	39.6	~		220	34.0	/1		6.82		,,,			Central Section,
70 7 91 36 50	2 775	92	57 2	70 72.	90	36	3.82	528	76		0.50	37.0	77	20	1.99	36.0	5%		495		102			George, H. Holl. H.P. Buchhog,
690 92 46 42	5 684		46 0.	18 660	98	32	315	436		16	1.15	367	70		3.50	30.0	56	-6	6.72	47.1	102	-22	34.33	RWBurt. J.W.C.Gray. Richard Milner.
73.4 /00 43 67 74.8 98 57 62	7 70.0	97	31 5	72 70.0 3-3 73.0 14 72	95	30	6.50	476	79 78	16	0.61	38.7	72 74	7 1	3.74	31.0	56	- 2) 2	7.62	510	103	-24	36.84	Richard Hillner, Pros HI Clara Han E. Look, P.OPurviance
745 94 53 61	6 742		57 3	5 69.5	190	371	3.97	558	·~ /	2 2	4	200	79	19	29/	34!/	60	5	6.75	57.7	99	-15	33.79	
	7501	98	52 0		93	20	229	503	75	29	0.49	38-6	74	91	3.36	326	62	Ž	3.48	52.0	99 99	-2/	30.97	C. Heiman,
736 92 50 34			49 13	5 71.0	92	34	6.19	432	86	14	0.81	32.1	73	2	4.10	334 30.8 374	60	1 3	466	48.8	102	-20	34.07	Su Sondusky, C. Mei man. Erof J. M. Cookmat. C. H. Karrington. G. B. S. Acoley. Miss LOM Cready.
76/95 59 56	7074	90		15 70.8	95	Θó	3.97	500	75	24	0.47	39.7		101	3.62	325	56	-/	5.74	52.4	95	-2.1	32.07	Hinderer.
732 96 47 50	9 75.3	96	43 1.4				278	48.6	76	11	1.17	39.8	73	- 6	280	32'3	58	/	7.23	46.8	102	-18	2943 33.77 3638	EHinderer, 7' AM Chapman, John C. Goodrich,
731 93 55 62	1 748	93	54 4	6 7/2	94	36		50.1	76	22	0.35	376	73	19	2,95	33.0	64	Zeno 2	5.98	514	95	1-18	42.13	
31 96 54 54	1 753	91	50 3	24 729	97		2.53	51.6	24	24	0.63	42.0	28	30	3.80	36.0	63	4	544	528	101	-/6	29.72	PJEaward
24 93 57 91	8 734	90	53 2 52 3 56 2	7 68	96	34	3.26	476	78	18	0.76	369	50	6	3.40	3/0	60	Zen	5.65	49,5		-17	37.75	Gen J M Augusta PJ Edward J T Gozevisch & Jum Stick en HC
9.2	3 ′ ′		2.	<i>15</i> †	7		3.50		_		0.35				3.17			-	8.00	-				J. Stanhenson,
3 94 47 47	7 74.6	97	48 3	69.8	93	93	248	526	77	27	0.60	43.6	72/	18	2.61	343	57	10	3.66	51.6	99	-18	24.2.1	JA Theophy Jos Withington
26 95 50 70	4 73.5	95	50 3.	6 67.9	96	36			79	22	0.57	40.5	<u> </u>	10	4.85	347	63	8	3.69	51.2	98	-17	36 50	John & Templeton
38 00 45 5.9	2 75.6	100	50 16	5 72	101	32	246	492	82	2/	0.28	396	2/	10	484	334	6/	3	3.05	516 520 499	10/	-20	35.72	La Saucra
56 98 46 74	7 736	97	45 1.	19 69 2		3/	3.72	468	77	12/	0.47	38.8	鴙	7 2	3.25	31.6	58	- 4 Zero	4.99	49.9	100	-20	3465	To Table Section 1
90 100 56 77	3 769	99	20 4	72 72 9	100	36	3,57		82	19	0.63	379	貓	24	257	36.0	62	200	5.90	518	/00	-20	3820	Prof. A.T.
50 93 57 42	9 767	96	57 4	76 72	94	39	209	51.8	75	20	0.63	43.1	<del>Z</del> 2	18	4.50	35.6	<del>9</del>	8	3.79	57.6	101	-17	3270	P.G.Gillum
742 76 57 54	9 753	96	53 9	7 70.7	95	√وق	3.63	467	57	20	0.57	39.6	74	10	3.49	33.7	60	之	5.72	51.4	103	-24	3287	Civernaen,
156 95 50 62	1 764	96	53 2.	0 719	93	36	295	514	80	22	0.96	434	77	16	548	36,5	63	5	281	510	99	-15	35.09	Southern Section,
60 93 60 59	2 78/	93	40 0.	719	94	43	246	53.6	79	30	0.55	46.6	7/	24	364	40.0	65	16	4,53	56.2	95	-9	38.95	W.T.Blythe, K
80 93 61 90	3 789	95	57 /	3 76.	98	44	4.04	54.8	78	29	0.77	47.4	37	21	720	42.0	65	14	3.46	581	97	-11	41.67	TJ Trovillian
36965069	7 75.3	88	56 20	5 704	99	34	3.02	48.8	80	21	0.77	400	76	12	456	348	61	3	5.45	5/9	101	-/8	37.19	Praton Soundayon,
34 92 51 52	5 768	99	49 2	6 7/3	93	36	2.65	525	79	20	0.41	426	53	17	434	366	62	3	3.77	54.0	99	-12	3/58	JJS Catheart
88 100 60 48	7 7 4 6	99	6/2	0 757	10/	40	3.00	52.1	82	26	0.57	41.2	76	18	308	38.5	61	9	285	541	101	-/6	32.41	John Juan.
75 4 90 05 97	7 783	98	56 /	A 74.7	//00	99	195	520	78	29	0.80	44.7	72	23	6.75	37.2	63	//	3.19		100		35.76	JH Lioc Amont
70 98 52 55	3 769	95	62 3	7 68.6	24	44	391	47.6	72	2/2	0.55	41.1	73	22	494	36.0	63	9	3.56	53.1	97	-9	34/5	E.E. Thornton,
16.6 94 50 54	5 76.0	98	59 2.	2 75.8	199	40	2.05	50.2	78	27	0.25	43.6	731	26	561	378	60	10	3.77	548	99	-//	38.64	Henry Fruit.
7 99 59 5.2	7 80.2	99	57 19	5 768	96	36	201	465	79	20	0.10	387	76	23	6.16	39.5	77	4	2.64	50.7	107	-18	35.27	ManClementine Fara
18 97 44 50	7 756	97	54 2	4 74.8	96	35	2.59	51.5	78	23	0.83	434	75	14	5.69	37.8	60	10	336	565	97	-14	33.70	Godfrey The trees
5 100 46 82	7 76.5	102	41 1.0	9 71.5	95	3/	2.75	476	33	AM AM	0.23	432	76	14	542	33.9	63	73.	3.27	530	100	-16	34.86	Jane Jankon Rela &
42 96 51 54	4 73.5	96	57 3.5	3 682	93	35	2.6%	454	24	15	0.86	3634	70	4	3.16	2/8.7	20	72	4.18	47.6	100	-26	27.84	Morthern, S
74 97 56 59	6 75.0	97 .	56 2.	5 707	97	39	2.49	509	79	23	0.49	735	73	20	3.85	37.3	59	8	397	54.6	107	-18	34.62	Southern.
79 1 123	1 73.1	1	3.0	6 + 5.3			-0.17	53.8	//		-2.84	39.1	-		3.14	29.6 +2.8	1		2.45	+01			38.05	The Advantage of the Advantage of Advantage
Palestine month of	a are g	yand.	tempfe	March;	Zluq	uoih	Mon	th of J	anu	pre	mont.	nof Jul	y; Ca	tho	ton,	mont.	Ton A	Jui	n fall	for No	vemi	er;	Ht Cari	rel, rainfall of June;
			- market for		MYF.	1 2 3 17	w Control	u to	WAL	de fina. I		an and the	112.07	10.	All Car	e incl	rasq	- MIL	A. G.C.	meed	rom.	Vanit	Bruto.	wite the bull tile

ALEXANDER:—Only light drifts of snow on the depth of two inches. Corn not all husked yet; 15th and none at end of the month; soil frozen to the grasses and wheat look well. Geo. H. Hall.

## The Future of Farms and Farming.

(Continued.)

not known, but it must have aggregated hundreds of millions of dollars. But all the products, *i.e.*, those consumed at home and abroad, were in—
1870 (including betterments and addition to

	st	00	k)	٠	٠	٠				٠	٠	٠	٠	٠	\$2,447,538,658
1880	) ,	,													2,212,540,927
1890	) ,														2,460,107,454

No absolutely credible method of estimating products for 1895 is available at this time, but since production has not increased to any considerable extent, and the farm value of many of the chief products has decreased to a remarkable degree, it seems reasonable to assume a decrease in the total valuation of farm products since 1890. Say, as a rough approximation, the valuation is \$2,300,000,000.

In the presence of these facts, in the front of these figures demonstrating that agriculture in this Republic has during the year fed itself, supplied all citizens of the Union engaged in other vocations, and then shipped abroad a surplus of over \$500,000,000 worth of its products, how can anyone dare to assert that farming is generally unremunerative and unsatisfactory to those who intelligently follow it?

How can the 42 per cent of the population of the United States which feeds the other 58 per cent and then furnishes more than 69 per cent of all the exports of the whole people, be making less profits in their vocation than those whom they feed when the latter supply less than 31 per cent of the exports of the country?

For the purpose of illustrative comparison transfer the \$4,000 agriculturally invested in each farm of 137 acres to the choicest Wall street investment. Risk that money in railroad first mortgage bonds, in bank stocks, or any other allegedly safe security which may be found a favorite among shylocks, brokers, plutocrats, monopolists, money-power manipulators, and multi-millionaires, and if it returns 6 per cent it is a remarkably profitable investment in the eyes of capitalists. Therefore \$240 is the annual income.

Follow the transfer of the farm money with that of the farm family to urban residence. Now, with the same labor in the city or village can they attain by hard work every day in the year, adding their wages to the \$240 income, as much of independence, wholesome living, and real comfort as the same amount of money in the land and the same heads and hands working on the soil generously and healthfully bestowed upon them, in the sweet quiet of home, amidst flowers, trees, fruits, and abundance, on the farm?

But the declaimers of calamity declare that the farms of the United States are sadly burdened with mortgages. The census of 1890, however, develops

the fact that on the entire valuation returned for farms there is only a mortgage of 16 per cent. It will be borne in mind, too, that many thousands of acres of mortgaged lands of great value which are returned as farms were such only before they were mortgaged. They were purchased to plat as additions to cities like Chicago, Brooklyn, Kansas City, and Omaha, and ceased to be farm lands as soon as mortgages representing part of the purchase price were recorded. Such lands are, therefore, wrongfully included and returned as farms. They show an aggregate of many millions of liabilities.

On each \$10,000 of rural real estate there is, then, an average incumbrance of \$1,600. And when the fact is recalled to mind that a large part of all farm mortgages is for deferred payments on the land itself, or for improvements thereon, what other real or personal property in the United States can show lesser liabilities, fewer liens in proportion to its real cash-producing value? Certainly the manufacturing plants of this country, neither smelting works, mills, iron and steel furnaces and foundries, nor any other line of industry can show less incumbrance on the capital invested.

Railroad mortgages represent 46 per cent of the entire estimated value of the lines of this country. On June 30, 1894, 192 railroads were in the hands of receivers; they represent \$2,500,000,000 capital—nearly one-fourth of the total railway capitalization of the United States.

On that date how relatively small was the amount of money in farm mortgages compared to the value of the lands securing them?

During the year 1894, according to the five reports made that year to the Comptroller of the Currency, the average iudebtedness to their depositors of the national banks was \$1,685,756,062.45. Besides the above, State and private banks, loan and trust companies, and savings banks owed their depositors during the same period an average of \$2,973.414,101, making a total of \$4,659,170,163.45.

And in this year, 1895, by the responses of national banks to the four calls thus far made upon them by the Comptroller of the Currency, their aggregate indebtedness to depositors is shown to be \$1,719,597,911.33; State and private banks, loan and trust companies, and savings banks show an aggregate indebtedness to their depositors of \$3,185,245,810, making a total of \$4.904,843,721.33.

These figures show an enormous and constant indebtedness of the banks and bankers alongside of which the money in farm mortgages and the debts owed by farmers are relatively insignificant. The debts of railroads, bankers, manufacturers, and merchants entitle them, and not the farmers, to be called the "debtor class" in America. In 1880, 44 per cent of all Americans engaged in gainful occupations were in agricultural pursuits. Applying the same ratio to the total population we should have a farming population in the United States for 1880 of 22,068,434. The returns of the Eleventh Census show that the rural population has increased by 4,078,422 during the decade 1880–1890. Adding this to 22,068,434 we get a rough approximation of the farming population in 1890—26,146,856, or 42 per cent of the total—and the number of farms in the United States in 1890 being 4,564,641, the average number of persons on each farm would thus, approximately, be 6.

There were in 1890 improved farm lands in the United States representing an area of tilled and productive fields amounting to 357,616,755 acres. At that time the United States contained 65,000,000 people. Therefore, each citizen of the United States, with an equal per capita distribution of farm products, was entitled in the year 1890 to receive the cereals, vegetables, and other products evolved from 51/2 acres of cultivated land, less the amount consumed for the maintenance of domestic animals. These figures illustrate the importance of having some other than an exclusive "home market." No legislation, however encouraging or protective, will be able to create an American demand, appetite, and digestion of sufficient magnitude to consume all that American farmers produce. Human beings capable of eating food products of even 21/2 acres each year have not yet been developed. Until they are or until the population of the United States has been quadrupled, foreign markets for farm products are essential to the prosperity of the plowmen and planters of this country.

It will be observed that between 1880 and 1890 the proportion of the people engaged in agriculture declined two per cent, and that to-day there are only forty-two persons in rural pursuits to fifty-eight in mercantile, manufacturing and other callings common to the great populational and industrial centers. Fifty-eight per cent of the people cannot always be satisfactorily maintained upon the profits of exchanges among themselves in the villages and cities. Food for all must come from the earth—from tilled fields. The population of the United States in 1915—a quarter of a century after the census of 1890-admitting that the increase will diminish very materially as compared with that of each preceding quarter of a century since the Government was established, will, no doubt, number at least 120,000,000.

The value of farm lands, being governed by the relation of the supply of those lands to the demand for them, will therefore steadily increase. The area or supply remains stationary, or from careless tillage decreases. But the added millious of our population augment and intensify demand. Therefore the prices

of farms must in the next twenty years, and possibly in ten years, advance more markedly than those of urban real estate. The owners of fertile fields, however, must understand now that agriculture is swiftly becoming a scientific profession. The more the farmer cultivates his mind the better and more profitably he can cultivate his fields. The Department of Agriculture has expended during each of the last two years a greater per cent of its appropriations in the application of science to farming, to correct tillage and fertilization, than ever before.

Each season teaches anew the imperative necessity of more and more scientific knowledge for those who are to plow and plant profitably. The markets of the world will finally be invaded, captured and held by those who produce cereals and meats, vegetables and fruits at the least cost, and can therefore most cheaply sell. Competition is fiercer every year. American inventions, improved implements and machinery for saving labor on the farm and for saving the fruits of that labor are exported to Africa, Europe, and South and Central America. Thus our own recipes and contrivances for cheap production are used abroad to strengthen the abilities of foreign farmers to contend with our own in foreign markets. Information direct from Russia, from Argentina, and from Africa tells of larger sales of American agricultural implements and machinery in each country each year.

Thus competition is made far more formidable by the increased use in foreign parts of our own improved machines and implements with which American manufacturers more than ever are supplying them. In view of such a state of facts, farmers must, to be successful, study probable demand and adjust supply to its needs. Forecasts of markets and their conditions can, by diligent study and attention, be so accurately made as to nearly always secure producers against loss. The profits of planting must largely become premeditated. The struggle to obtain for the offerings of the American farmer the markets of the globe is fiercely carried on between him and every other farmer in all the world. They are brothers in agriculture, as were Abel and Cain, "bringing the fruits of the ground "for approval. He who brings the best and cheapest will find approval in welcoming purchasers and remunerative prices. The success of the farmer of the future therefore depends more upon mental than upon manual effort.—Report of the Secretary of Agriculture.

Of the Washington elm, at Cambridge, Mass., one of the largest in New England, Prof. Asa Gray made an estimate that it produced seven million leaves, which would make a surface radiation of about five acres in extent, and give out every fair day in the growing season seven and three-quarter tons of moisture.—Ex.

## U. S. DEPARTMENT OF AGRIGULTURE, WEATHER BUREAU.

EXPLANATION OF FLAG SIGNALS.











Fair Weather.

Local Rains. Rain or Snow.

Cold Wave

### INTERPRETATION OF DISPLAYS.

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No. 2, alone, indicates rain or snow, stationary temperature.
No. 3, alone, indicates local rain, stationary temperature.
No. 1, with No. 4 above it, indicates fair weather, warmer.
No. 1, with No. 4 above it, indicates fair weather, colder.
No. 2, with No. 4 above it, indicates warmer weather, rain or snow.
No. 2, with No. 4 above it, indicates colder weather, rain or snow.
No. 3, with No. 4 above it, indicates colder weather with local rains.
No. 3, with No. 4 below it, indicates colder weather with local rains.
No. 1, with No. 5 below it, indicates fair weather, cold wave.
No. 2, with No. 5 below it, indicates wet weather, cold wave.

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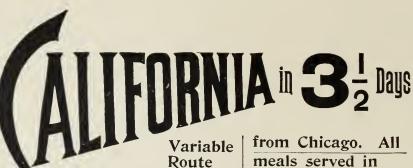
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February, 1896.



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# WEATHERANDCROPS

Publication of the Climate and Crop Service of the Weather Bureau, Illinois Section.

Vol. II.

Chicago, Illinois, February 10, 1896.

No. 2.

## The Month of January.

With the exception of the very short sharp cold wave of the 3d to 5th, and the slight cold period from the 12th to 14th, principally in north and northwest counties, the month of January was uniformily warm, averaging 6.2° above the normal for the month. January in '76, '80, '89, '90, '91 and '94 was warmer; the month in 1880 being nearly 11° warmer. The minimum of the month, recorded within the State, was —15° at Ashton, on the morning of the 4th, and the maximum 61° recorded at Cairo and Mt. Vernon on the 30th, while just across the Mississippi River at St. Charles, Mo., a maximum of 64° was recorded on the 11th.

Rainfall during the month was largely lacking up to the 21st, when a rain period of four days gave most of the rain for the month, this, with the rainfall on the 31st, comprised the rain periods. The average fall, 1.16 inches, is 1.09 inches below the normal for the month and the lowest which has been recorded since 1878. The northern section was especially lacking in precipitation, the snowstorms being very light and few. The least precipitation reported for the month was 0.43 at Morrisonville, and the greatest 3.54 at Greenville, stations not a great distance apart. The average snowfall for the month was one and one-tenth inches, most of the snow, however, fell in the northern section in two light storms.

The amount of snow on the ground was very small, even at the beginning of the month, and on the 15th there was but a trace in the northeast country, while the month ended with bare ground, practically free from frost and very muddy.

Although the month was very much lacking in rainfall it was not lacking in cloudiness and fog, in fact the last half of the month was almost without a clear day, while the average number of clear days for the month was but eight, partly cloudy nine, and cloudy fourteen, and with precipitation five.

The prevailing direction of the wind for the month was S., although both S.E. and N.W. are found nearly as frequent in the reports. The average hourly velocity was 9.8 miles, greatest velocity 44

miles from the S. at Chicago on the 11th. Mean air pressure 30.17 inches, highest 30.81 at St. Louis on the 4th, lowest 29.54 at Cairo on the 22d.

## Observers' and Correspondents' Notes.

CAZENOVIA:—The sleet and rain that fell on the 22-23d formed a thick coating of ice on everything; it broke down a good many fruit trees.

J. G. McWhinney.

GALVA:—The rain of the 22d froze as it fell covering everything with ice. This continued throughout the 23-24th. Trees commenced to break under their load on the 23d, the ice not infrequently becoming more than an inch in thickness along one side. Maples, soft and hard, birches and box-eiders suffered most, and many trees were severely damaged.

F. U. WHITE.

KNOXVILLE:—The worst sleet storm in fifty-six years on the 22d to 24th. Ice three quarters of an inch thick covered everything; fruit and ornamental trees and shrubs were badly damaged.

C. N. BUTT.

MINONK:—Roads very bad and but little frost in the ground at the close of the month. Severe sleet storm on the 22-23d.

O. M. DAVISON.

RILEY:—The mean temperature of January was 7° above the normal of the past 35 years, precipitation 1.05 inches below. January in '63, '69, '76, '78, '80, '90 and '91 was warmer, while the month in '65, '66 and '72 had less precipitation. A very cloudy month. Winter grains are probably in good condition, but have had no protection; frost about 10 inches deep.

JOHN WEST JAMES.

SYCAMORE:—The precipitation was less than for any January in past 15 years.

ROSWELL DOW.

Walnut:—The roads are almost impassable; heavy hawling is not possible.

O. C. Nussle.

Wheaton:—On Tuesday, the 21st of January, there were two or three very distinct peals of thunder at about 11 P. M. WM. H. JOHNSON.

WINNEBAGO:—Winter grain at the end of the month was looking good; no water went into the ground during the month; roads in bad condition.

FRANK OSBORN.

ALEXANDER:—No snow on ground during the month and little or no frost at the end of it. Stock doing well.

GEO. H. HALL.

LA HARPE: -- Winter wheat in first-rate condition; warm weather lately started peach buds, etc., to swell.

FRANK CAMPBELL.

Mattoon:—On the 4th at 7:14 P. M. a slight earthquake shock was felt here, lasting about 45 seconds.

JOSEPH WITHINGTON.

RUSHVILLE:—Heavy ice on the trees from the 22 to 28th, many trees damaged, especially maples.

NATHAN T. VEATCH.

LOUISVILLE:—The month of January was one of the most pleasant for years, there being no snow or severe cold, little rain and generally light winds. Since the 2d the ground has been bare.

BELFORD A. JENKINS.

EAGLE POINT:—Ground generally bare of snow during the month, and frozen about fourteen inches deep. Roads are in bad condition. Much of the time stock could not be allowed to range the fields as it cut pastures and meadows badly, destroying the grass. Stock water scarce, wells gradually failing.

HENRY ELSEY.

Kernan:—Month generally warm, with little snow; heavy sleet on the 22d preceded by fog, also fog on the 31st; sunshine largely deficient. Winter wheat injured by freezing and thawing, and the same with clover.

M. Funk.

KISHWAUKEE:—Frost nearly out of the ground. The month has been very inild with the exception of a few days at the beginning, never better weather for cattle feeding. Winter grain is looking well, also grass.

GEO. STEVENS.

Toulon:—Weather was fair and roadways generally good first half of the month. A storm of rain and sleet set in on the 21st covering everything with ice. This stayed on until the 29th, doing considerable damage to trees, fruit trees especially. Young trees were bent to the ground and held in that position for the week. Stock looks well, feed holding out better than usual owing to the mild weather. No snow this month, except a little with the storm of the 21st.

HENRY NOWLAN.

CAMBRIDGE:—In this country for the year '94 we got nine inches less than our normal precipitation, and ten inches less than normal in '95, while January '96 has nearly three inches less than normal,—does this mean another drouth season? Stock wintering well, there seems to be an abundance of coarse feed.

S. B. RANDALL.

WAPELLA:—The wheat crop is practically uncovered; the plant looks green and vigorous but if freezing weather ensues it is liable to serious damage. Rye is about the same as wheat. Cloudy and gloomy weather for the greater part of the month, roads are impassable.

W. R. CARLE.

HILLSBORO:—Wheat doing well, and all winter crops improving. Stock doing well, feed holding out finely.

E. J. FILE.

FREDERICK:—The early part of the mouth dry and roads in very best of condition, they have been bad since the 22d and are now almost impassable. Wheat, although bare all month, is in good condition, late rains have helped it as ground was very dry on top.

E. HINDERER.

FAIR GRANGE:—The highest temperature of the month was 52° on the 30th, lowest 3° ou the fourth. The first half of the month was mostly clear, last half mostly cloudy with excess of moisture in the atmosphere. The ground has not been frozen more than 4 to 6 inches, and the month ends with no frost in the ground. As a whole the month has been rather favorable for wheat and rye.

J. C. Babbs.

LOAMI:—A large amount of shock corn will be husked ou account of the mild weather requiring much less feed for stock. Wheat and rye look very well. Water is plentiful in wells and streams. No frost in the ground; roads very muddy.

H. C. FOSTER.

WABASH:—No frost in ground at end of the month, and but little for two weeks previous. Rain sufficient and drilled wheat doing well; broadcast not so good. Very mild for January; stock in fair condition.

JOHN R. PARKS.

NEW BURNSIDE:—Grain doing very well, but the light freezing, with no covering on the ground is likely to damage it somewhat.

GEO. HARRIS.

IRON:—The fore part of the month was severe on wheat and clover; freezing during the night and thawing during the day. Latter part of the month has been more favorable, wheat showing some life.

W. F. HOSKINS.

GERMANTOWN:—The past month was favorable for wheat so far as moisture was concerned, but we had a week of freezing and thawing which was hard on it. No snow to amount to anything; ground has been frozen only a few inches.

B. J. SCHLARMANN.

### Miscellaneous Phenomena.

THUNDERSTORMS:—Wheaton 21st; Plum Hill 31st.

AURORA: -Ashton 3d; Chemung 20th; Winnebago 3d.

Solar Halos:—Ashton 1, 3, 8, 9, 11th; Cambridge 3d; Chemung 26, 27, 28th; Chicago 2, 30th; Lanark 1st; Riley 9, 20th; Scales Mound 1, 3, 4, 9, 10, 19th; Winnebago 1, 2, 3, 4, 5, 9, 21st; Hannibal 7th; Keokuk 14th; Rushville 13, 21, 28th; Springfield 1, 20th; Friends Grove 4, 14th; Louisville 14, 15th; New Burnside 29th; Olney 3d.

Lunar Halos:—Ashton 1, 19, 28th; Chicago 4, 5, 9, 30th; Davenport 21, 28th; Galva 21st; Lanark 2, 4, 21st; Oswego 7th; Ottawa 5th; Riley 2d; Scales Mound 2, 3, 6, 9, 29th; Wiunebago 2, 3d; East Peoria 28th; Hannibal 19, 26th, 28th; Keokuk 7, 26th; Rushville 2d; Springfield 28th; Cairo 28th; Friends Grove 19, 28, 29th; Galconda 28, 29th; Gordonville, Mo., 28, 29th; Louisville 1, 28, 29th; Mt. Vernon 29th; New Burnside 28, 29th; Olney 28, 29th; St. Louis 29th.

SLÉET:—Ashton 10, 22, 23d; Cazenovia 22, 23d; Chicago 23d; Dixon 19, 23d; Galva 22d; Glenwood 22, 23d; Knoxville 22, 23, 24th; Lauark 24th; Monmouth 22, 23d; Ottawa, 22d; Scales Mound, 10, 24th; Streator 22d; Sycamore 23d; Walnut 22, 23d; Wheaton 23d; Alexander 24th; Bloomington 22, 23, 24th; Coatsburg, 22, 23d; Frederick 22d; Hannibal 22d; Loami 24th; Martinsville 11, 24th; Rantonl 10, 11, 22, 24th; Tuscola 24th; Golconda 16th; Jordan's Grove 24th.

Fog:—Ashton 8, 10, 11, 24, 31st; Aurora 10, 11, 18, 21, 23, 24, 30, 31st; Cambridge 8, 31st; Cazenovia 24, 31st; Chemung 7, 11, 18, 24, 30th; Chicago 11, 21, 23, 24, 31st; Davenport 31st; Galva 31st; Lanark 31st; Ottawa, 11, 24, 31st; Riley 31st; Streator 23; Walnut 11, 31st; Alexander 31st; Bushnell 31st; Decatur 21, 22, 23, 24, 31st; East Peoria 31st; Gilman 10, 11, 18, 19, 22, 23, 24, 30th; Hannibal, 9, 31st; Keokuk, 8, 9, 10, 31st; Loami, 7, 11, 18, 21, 23, 24, 31st; Martinsville 11th; Mattoon 10, 11, 31st; Mt. Pulaski 11, 18, 21st; Paris 31st; Rantoul 20, 23, 24, 31st; Rose Hill, 11, 12, 13, 18, 20th; Springfield 11, 18, 21, 31st; Tuscola 10th; Cairo 9th; Golconda 8, 9th; Greenville 11, 18, 31st; New Burnside 10th; St Louis 10, 31st.

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CHAS. E. LINNEY,
OBSERVER IN CHARGE.
CLIMATE AND CROP SERVICE, WEATHER BUREAU, ILLINOIS SECTION.
EDITOR AND PUBLISHER.

WALTER S. PALMER,
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## Chicago, February, 1896.

HE chief of the Weather Bureau, recognizing the fact that a distinction should be made between climate and weather as the title of a division and the work which it has in hand, and considering also that the term climate refers especially to seasonal meteorological conditions and to the variations between places in their average meteorological features, and that the work of voluntary observers and crop correspondents has to do almost entirely with climate and not with weather, which latter term refers more to the drift of changing air conditions from day to day, has sent out official notification that the "State Weather Service Divison" of the central office at Washington will hereafter be known as "Climate and Crop Division." The weather-crop bulletins of the Weather Bureau will hereafter bear the following caption: "U. S. Department of Agriculture. Climate and Crop Bulletin of the Weather Bureau." The designation "State Weather Service" will be dropped, as misleading and improper, which is especially the case when no State aid is received to maintain it. Instead

the work in the state will be designated: "U. S. Department of Agriculture. Climate and Crop Service of the Weather Bureau. Illinois Section."

The order also points toward a somewhat radical but highly important change to secure uninformity in size and style of publications and bulletins. These are features which are especially desired and which will be welcomed by all who have seen the go-as-you-please style heretofore in vogue. We hope in our March issue to give full particulars regarding the improvements to be made.

WE wish to impress upon all our observers the necessity of a daily measurement of rain and snowfall. A few of our reports for the past month were received with the rainfall of the 22d, 23d and 24th given as one measurement at the end of the rain period. This is entirely wrong, and makes the rainfall record practically useless, as the daily fall thus becomes an estimation. It would be quite as reasonable to read your thermometer 24 or 36 hours after a day had passed. Always measure the precipitation at the last observation of the day, and empty the gauge.

THE soil temperature observations of Mr. Chas. A. Love, Aurora, Ill., for the month of January, show an average temperature of 27.6° at 6 A. M., while the air temperature at the same hour was 22.4°. The highest temperature of the soil was 34° on the mornings of the 23, 24, 26, 30 and 31st, and the lowest 14° on the 5th. On the 26th, Mr. Love notes an unexplained rise in the soil temperature to 34° (a rise of 2° from the previous morning) while the air temperature had fallen 10°, and he says, as a possible explanation, "that at times a force other than heat seems to affect the thermometers set in the ground." Mr. Joseph Kuhles notes a soil temperature of 32° at ten inches depth, on the morning of the 31st.

NE of the lately proposed plans in connection with mean or normal climatic data is to exclude all abnormal figures from it, thus making the result a mean of the normal record. As for instance, the normal rainfall for this State for the month of December is 2.45 inches; the fall for the last December was 4.72 or 2.27 inches above the normal; in fact an abnormal record, and in a 20 year record raises the mean for the 20 years 0.11 of an inch. On the other hand the month of October had but 0.62 of an inch of rainfall which is 2.22 inches less than the normal, and reduces

the mean for the month 0.11 of an inch. Cases much more abnormal than these might be cited, but these are recent and show the purpose of the proposed change which would discard all such abnormal readings and only admit those which approached the normal; the abnormal figures would then be used as a collection of extremes. The plan would quickly establish an unvarying normal.

HICAGO'S paragraphers gave more than usual prominence to the supposed antics of the ground-hog on the 2d of February. Even the artists of most of the dailies used the little defenseless animal for cartoons. The people abroad are thus more firmly convinced than ever that this city is a wilderness whose meets and bounds are measured by the rolling, uninhabited prairie on the one hand, and unbroken forest on the other; where the buffalo and the prairie-dog, the bear and ground-hog roam unstayed through the streets. Isn't it about time these fairy tales on the weather and the civilization of Chicago, not to mention also the entire country, gave way to a small gain of sense, and less nonsense.

## Weather-Crop Bulletin.

FOR THE MONTH OF JANUARY, 1896.

Warm, cloudy weather, with little rain or snow, during the mouth of January proved rather beneficial, thau otherwise, to winter grain and grass. They were exposed to the weather throughout the month, the slight snow covering which remained at the beginning of the month rapidly disappeared, and, except the sharp cold of the first week, the temperature was high and rather unusual for the middle of the winter. Wheat, rye and grasses are generally in fair condition, although a few fields in the southern half the State have been somewhat injured by the freezing and thawing. Little frost remained in the ground at the end of the month, although in extreme northern counties there was from six to ten inches. Stock is generally in good condition, with feed and water plentiful. There is, however, a growing scarcity of water in northwest counties and of feed in the southern section. Roadways were generally good until the last week of the month when rain and warmth caused heavy mud and almost impassable roads.

## NORTHERN SECTION.

Throughout the northern section the month was a mild, cloudy and dry one with temperature from six to eight degrees above the uormal and rainfall about two inches deficient. Except the first week of cold weather the temperature was close to the freezing point and the frost remained in the ground, roadways were good and grain, although entirely without the snow protection, was not injured. At the end of the month the warm weather caused considerable mud and roadways were bad, the ground, however, still retaining considerable frost. Stock is generally in good condition and feed plentiful, being much pieced out by the mild weather. Water is becoming scarce in the northwest counties. Ice harvest was fair at

the first of the month but has since become soft and porous. The severe sleet storm of the 22-23d did some damage to fruit trees and shrubs, telegraph and telephone wires.

### CENTRAL SECTION.

In the central counties the month was warm, gloomy and dry, rainfall being deficient about two inches and the temperature from five to eight degrees above the normal. The first week only was cool and caused the frost to penetrate six to eight inches but with the general warmth during the remainder of the month it had practically disappeared at the end of the month. Little suow fell and grain was without protection still it is generally in good condition and looking green and healthy. Grasses also are in fair condition, except some of the fall sown, which from lack of moisture has light and poor stand. Roadways were good until the rain and sleet storm of the 22d-23d since which time they have become muddy and rough. Stock is generally doing well and feed and water are plentiful. Corn is practically all cribbed. The ice crop thus far is short from the mild weather. Fruit trees appear to be uninjured thus far, although considerable damage was done by the sleet storm, which reached its greatest severity in the central sectiou.

### SOUTHERN SECTION.

Throughout the southern section the month was very short in precipitation and sunshine and much above the normal in temperature. Sufficient rain fell, however, to keep winter grain in fair condition but more moisture is needed. Reports show that some damage has been caused by freezing and thawing as the grain has but little root growth from the extreme dryness of the fall. No snow covering was given the plant after the first week. Stock is in fair condition but feed is becoming scarce. 'At the end of the month roadways were muddy and bad, although during most of the month they were in fair condition and travel was easy. The month ended very warm and with rain setting in.

## Valuable Short Notes.

Cedar oil is not a small item among the New England industries. It is profitably produced in some regions by distillation from the small branches of the trees, which is a much more convenient and productive method than to distill from the shavings, as formerly practiced, and may be made a profitable industry wherever cedar grows.

There is no business or profession which requires so bright an intellect and so deep study to fully compreheud as that of agriculture. This fact is really now beginning to be realized. So many conditions and circumstances confront the farmer from day to day that scores of points must be considered before a step can be judiciously taken.

The industry of collecting and curing the leaves of the wild sumac occupies the summer mouths of hundreds of women and children in Virginia and the Carolinas, and some of the stations have been testing the advisability of cultivating the plant. Sumac is used in dyeing cloth, and in the tanning of fine leather. Nearly 200 tons are yearly imported from southern Europe.

The majority does not appreciate what vegetable matter in the soil does for us, in the way of moisture in the time of drouth. If one or two crops of vegetable matter are plowed under during the summer and fall, the succeeding crops are much surer if the year is a dry one. We know that success in growing any plant depends much upon the amount of moisture in the ground.—The Western Plowman.

Monthly Mercorological Harafor January, 1896, Illinois, Stare Weather, Service,

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Havana, Hillsporo,	Mason, Montgomery, 1%	3/.6	55	29	Zero		1/.7/	0.74	2.3	0.8	0	0	/2	1/2	/2 1	5 Vm	· Gen J. M. Rryggles,
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Daily and Monthly Precipitation for January, 1896. Illinois State Weather Service.

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# Climate and Crop Service of the Weather Bureau.

ILLINOIS SECTION.

CHARLES E. LINNEY,
Observer, Weather Bureau,
SECTION DIRECTOR.

REVIEW FOR MARCH.

WALTER S. PALMER,

Observer, Weather Eureau,

ASSISTANT

Chicago, Illinois, April 10, 1896.

## The Month of March.

The temperature during March was quite uniformly low, although but one marked cold period occurred, that from the 11th to the 15th. During this period the temperature fell below zero in several of the northern counties and four below was registered at Chemung, while freezing temperatures extended over the entire State. The only marked warm period of the month came with the last four days when the temperature rose above 70° generally throughout the State. The highest was 79° recorded at Mt. Vernon on the 31st. The average temperature of the month was just 2° below the 20-year normal.

Although precipitation, in measurable quantities, feil in some portion of the State on 25 days during March, the actual average number of days with precipitation was eight, and the precipitation only reached the low average of 1.84 inches which is 0.94 below the normal. The southern section received by far the largest amount, both in rain and snow, while central and northern sections were just about equal, and less than a half of the southern section. The greatest fall was 5.49 at Mt. Carmel, and the least 0.43 at Bushnell and Glenwood. The average snowfall for the State was 6.8 inches, and by the fall of snow on the 14-15th nearly two inches covered the ground on the latter date, while no snow covered the ground at the end of the month.

Clear, partly cloudy and cloudy days were nearly equal, the average being 10,11, and 10 respectively. The atmospheric pressure was high, the average being 30.08 inches, with highest, 30.64 inches, at Chicago and Springfield on the 14th, and lowest, 29.25 inches, at Davenport on the 28th.

The total wind movement of the month was 8706 miles, average hourly 11.9, prevailing direction northwest, and greatest velocity 56 miles from the south at Chicago on the 21st.

The storm which passed over the State on the 28th developed great energy along the northern border, in many places approaching a tornado. At Oregon, Ogle Co., a tornado is reported, which traveled some four-teen miles northeastward, and did considerable damage to barns, outbuildings windwills teners, etc., and some injury to stork but fortunately up to so of life.

Observers' Notes.

Ashton.—Plowing began the 30th.

IRA R. GEORGE.

AURORA.—The soil temperature at 6 A. M., averaged 31.6°, air temperature at same hour 24.6°. Highest temperature of the soil 40° on the 31st, lowest 22° on the 14th.

CHAS. A. LOVE.

CLEAR CREEK.—Largest run of maple sap this spring ever known.

H. K. SMITH.

KISHWAUKEE.—High wind on the 28th from the southwest at 4 P. M. It blew down small buildings and some windmills. The path of the storm was about a quarter of a mile wide and fourteen miles long. There was a funnel-shaped cloud and lightning. I learn later the storm began at Oregon and near there tore down everything in its path, killing some stock. Plowing has begun, a few have sown oats; winter grain looking well, grass just starting, frost all out of ground.

Geo. Stevens.

MARTINSVILLE.—The last two days of March have started the grass; plenty of moisture at the top of the ground, but dry at a depth of three to four feet.

J. B. SHEAPLEY.

MINONK.—The month of March was very dry, but there is more moisture in the ground than a year ago; some farmers are sowing oats. O. M. Davison.

OREGON.—A tornado on the 28th at 4 P. M. Three large barns and various small buildings were completely demolished and a number of dwellings badly injured.

A. P. HATCH.

(Continued on page 4.)

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Natural History Library

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( PPPP ma/2 77a.	130na /	37.5	72	30-3/	12	13	2.37	0,82	23	9.8	60	0 1	5 14	12 / 13 / 13 / 13 / 13 / 13 / 13 / 13 /	o am	<u> </u>	L. H. Bean, Frof M. S. Oudyn, Frof M. S. Oudyn, M. J. Hoskins, W. J. S. Carnear
Herrins Prairie	Williamson / *	42.6	75	3/	19	/3	1.2 / 9	1/390	29	9.5	3.5	0 /	9 9	13	y urr	Υ.	WI Hoskins
Jordans Grove Lyouisville	Randolph, Clay St Clair, VX	77.4 42.6 40.8 38.6 39.0 37.8	68	~30-3/	13	12	2,75	1.00	23	18.3	1.0	0 /	9 9	13 /	2 00	1	DECOMA GOVERNING
Ill yearboro	St Clair, 5%.	39.0 37.8 41.7	70	~3.0	19	12	4.51	1.14	22-23	70	~3.0	0 1	3 126	901/	0 1 0 7	γ	John Juan,
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Hent Burnathe	Johnson VIX	43.6	70	303/	20	/3 /3	2.86	1.00	22-23	6.0	3.0	0 /	6 9	19 7 16 1/ 17 9	orn	r	G.C. Thornton.
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Prumi Hill The Thank Hill	Old Office House	398	17/4	3/	15-	/3 /3	3.89	0.74	22-23	10.0	10	0	96	16 1	om	Y	L.C. Saegar
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tor the State,	Central	406	72		17			1.22		10.3	3.7	0	9 9	13 9	y Jr	m	Stotions
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## Daily and Monthly Precipitation for March 1896. State of Illinois.

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Ashlon Qurero	23		02		19	148		二		20	.05 126 T				.02	02		02			7			17			76				1.7	De M. M. Robbins
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John John	-	-	7	$\vdash$	.06	18	17	-	7	14	.04		-	.06	7	-		08	7		7	T		n	7		19				0.4	3 Clark Holbrook
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Anaxyille (1)	-	-	.06	-	12	├	-		-	7	.03	-	-	.08	30	7		.3/	-		7	7	-+-	17	-	.42	.03	-	_	L	1.10	Ch Buil
Laterange.	42	.04	06		31				7'	05	09				.08	77		.09	7					1	7	n	24	.12			1.04	Prof TE Sangord
Lectarre lowa.	.01	.07	09	.0	25 8.38 18	1				02				.01				.09						-		4	27			.04	0.7	The h. Werta C.P. Bisney O.M. Bayuson P. J. S. Strang Bey a. P. Hatch J. S. Scely
Minonk	.02	1	.09	+	35	08	-	-		-	01		-	12	.07	7	-	1.02	.05		7'	-+	7	7	-	7	63	-		-	1.08	O.M. Bayison
Oregon.	10	2.0	7	F	30					7	.05							.40	ł.		7,	_		7			.11 .80 .87				4.70	Rev a PHatch
Osvetgo Ollawa Reunolds	13	<u> </u>	06		31	1			7	.05	7			7'	.08	72 72 77		./6	7'		7	$\pm$		17						-	1.71	
Roleie	13	-	.08	1-	38	23			7	7	.05			TT	.03	7		1/2		$\vdash$	7	$\dashv$		77		.05	.43 .43 70			10	1.10	Thos Chewis
Rockford	20	-	14	1_	143					40				7	7	7			29			1		7	7'	7'	.70	-	7	14	2.02	Thas Chewis I West James H. C. Porler R. A. Jawley L. L
Rockford. Round Grove. St. Charles	25		10		37	20				.45					.05	7		77						7	10		141 1.13	.03			2.40	Stadams
Streator	177	05	.08	-	-570	-			.03	39				./5	.05	02	77	.04	7	7	7,	-		.04	1	25	22			.09		Hoseph Vipond
Sucamore	10	1	10		30				7	.10	0.5			05				05			7		77	77			.69			17	1.44	Roswell Dan
Walnut	02		97	-	151	.09					03			77	.05	-		.05	.09		2"			15	-	7	78	-	-		1/11	MI Canadau
Mheaton. Unnebago.	23		08	+	33	<u> </u>				25	20			./3	7			./2						-	7/1		78 782 .38				1.51 2.11 1.28 0.9	W.H. Johnson
(10m)		1	1 7	1	150	17'	- (7)				-	m			ı			.01	-	m	CP.	m	77		m		140		_		0.9	Robb McGrath
Gentral Section	107	02	1.03	10	127	.05	7	0	.01	.06	.03	T	.00	.02	03	17	0/	-11_	.02	1	7'	7'	7' 00	7	17	.03	.47	01	7	.01	1.30	
alexander Decilon	-	┼	P	-	7	.//	7			77		_	-	10	.08	777	-	03	08		77		27	17	20	02	./3		_	_	0.8	2 (-00) ((-))
allanta.			Ľ		7'	177	1			-	.04		1	15	.08			46.	0.0				07 20	.77	and U	20,2	.05				0.9	R. W. Burt
allamont. (1)	-	-	-	-	+	-	$\vdash$		$\vdash$					-		-	Н	_		Н	$\dashv$			+-	-			-			-	B. W. Burt. D. P. Buchhoo.
Beardstown (2)			777		34	21	1				04				./2			.76	02				24	-			.02				0.98	ri ir E iri eans
Dinomingion		77	7'		.03					T	04			.25 .12) .08			7	7	.77			7/	7.5	7			19				0.43	Richard Milner.
Bushnell	+-	17'	177		27	10	<del> </del>	.03		7'		7	-		30	7	-	21	-				27	7.	-	03	04	.01		7'	1.51	Ran P. Zook.
Carrollion.	10		7	2	7	-19	-	15			7'	77		29	.30	171		7	.08			7	27	1	65	- 100	./6				1.43	Prof Clude Stone
Charleston	10				22	34			1		05			2.6	05			21	15		01	04	24	.04	.05		.30				1.73	Jacob B Dazei
Decalur	.03	7	7	$\vdash$	01	45	.05		-			-	-	15	1	T	-	23	7		7		//	17	.34	.30	.03	7			1.85 0.94 1.144	C. Helman
East Peoria	-				32		100		7	7	03			33	_	-		20 22			05		3.5	7	,,,	28	06 T				1.20 2.20 0.95	CL Parrington
Traderich.	1		7		20						7			30		7		7				7	2.5	7	-	10	.10			.25	0.95	C. Helman. Proj. J. M. Coonradt. C. L. Tarrington. J. H. Schooleu. F. Hinderer.
Gilman lowa			1.10	1	.36	17			71	7'	7			20				29	20	18			7/-	7		.09	30			./6_	152	Pm Change
Grafton Gransville	28	1_	7	$\vdash$	.26	1	-	19			77	77	-	15	T			32	777			23	77	14	-	.06	.03	.04		_	0.56	I John L. Goodvich.
Handybal Mo.	1		7	Ħ	1./3	.01	_	.02			7	1.		27	.03	7		.09	14		77		12	.01	.05	02	10			.02	0,92	Emily A. Gray.  Con I'm mo.  Con I'm Ruggles.  P. J. Edwards
Havana	.05				7	30	7	71			7			.05	.09			.05	7'	02	02	07	27	1.00	.15	01	12	.02			1.21:	PJ Edwards
Reckuk Towa,	7	-	.03	+	20		-				.03		-	.15	02	7'		92 20	.10				7'	17.	-	26	-18			.02	0.88	Frank Campbell
Learnation.	-		1_		120	-		46	7		77	77		11	77			.17	(2)		7	01	10	7	90	T	.04				0.53 1.27 1.90 1.13 1.23	Frank Campbell  W Stickler  J. Laster  J. B. Sheapley
Martineville	02	-	.01	1.	1.12	12	.05	.05			7'	7	-	23 27 17 45	1_	7'		19 3/3 22			01		12	33	22		50				1.90	J. B. Sheapley
Martican, Morrisonville, Mi Pulaski	-	-	$\vdash$	7	55	22	.05	.02			.02.	177		17				22	12		1	- 1	12/	15			.13				7.73	J. Wilhington. Harry Grandy. Z. K. Wood. John L. Templeton. H. Sheetz.
Mr Pulaski	2.0		<b>—</b>	1	.0/3	20		-02	T	.10	.10	777		.05	08			.06	09		7		50	1	./3	7	05			777	2.19	Z.K. Wood
Palestine, Mo	-	-	-	┼	1.10	2.0	18	Z.			05	7	-	10	20	-	Н	16	26		74			+	.02		7'	20	22	7.		John L. Templeton
Paris m.			.05	-	25	F					01	_		35	14.			25				-	15		7		36				0.85	B Meyers
Philo			7	7	17	35			$\mathcal{I}'$	_	7			706	77.	m	m	14			77	1	74	.25	71			<i>CB</i> .		m	0.7	Tr. Tred Brendel.
Bahinson			1.	17'	1./0	97 46			.0.2	7'			-	.35	7	7'	1.	05	05		7	50	10	. 23	1	71	07	70		7	1.05 0.77 0.87 1.85	A B Clark
- RoseHill		F	7	7	.05	1					.20 T			411	91	01		571	_		49	10	15	nu		17	100	.08		17	2.93 0.78 1.23 2.20	I ISAAC Diblor.
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Spring reld. Terra d'une Ind. Tuscola					07	.3/	.30				10			07	.18	71		15	.19 .06		7		2.7	.03	27		.60				1.46	Irwin Legier
Warsam Querages.	02	7	01	7	.17	08	01	.01	7	7	02	7	.00	18	04	7	20	13	.05	.01	01	02	14 7			0.5	14	.02	01	02	1.26	L U. N. LOX.
Saux Laur Carri	1	1	1	1	11/	100	1	W.I.			الكواند	-			-													W. W. W.	4			1
Southern Section																					1											Br.michels.
Cisne,			./2	F	129	157	.12 12 T				7'	77		12	35			35 25	.//				18	.02			7'	78	51	1.30	397 2.88 3.72 3.30	Brmichels. J.W. Buram. W.H. m.x. John Buck.
Cobden			.07		.57	23	12				27	n		22	2.2			24	.07			7' 1	10				16.	6028	Zel	.16	3.72	John Buck
Plaquoin,			-									1_			.90								50					90				
Criends Grove	.06		7	12			59	-1			7			.60	.50			33	.10	.//	-		77		7'			T	97		4.42	T.I. Travillian
Gordonville Mo.			34				.15				7	7		.45				.60			77	65	18		0	77	100	n	.33		3.45	Lim Bean
Greenville.	-		05	-	20	35	.04	04			.04			50	10			05 30	201	7	-	1/.	50 40		2	7.	48	1.00			2.37 4.55	M. S. Oudyn.  D. R. Harrison.  W. P. Hoskins.
lron.	-			F	07	50 83		01			7			40	.55			20	-10			7 3	09 09			7		1.30	.05	- 1	3.13	W. P. Hoskins
Jordans Grove, Louis ville Mascoulah,			.02		02	13	.18	4			03	7'		13	27			15	74			7 /	00		.05	1-	7	20	45		3.69 2.75 2/89	B. a. Jenkins. Dr. G. Leibrock.
Mascoulah, Meliganshoro	-		.06 T	-	.50	51	.50	7			12	1º4		20	41			.10	26		07	-6	10 .02 14				7	40 56	1.02		4.51	. K f ul. adal.
MI Carmel	20			7	02	35	.50					.10			1.40	7		.60	20	1	7.	04 9	05		.03			.70	1.15		5.49 4.05 3.46	Mrs Am Philips
Mi Vernon Ind. Muddy Valley	05				stole	.41	40							30	.46			.60	.46		7		78				7'		.60	7	3.46	T.P. Steele
Muddy Valley	-		7	.03	22	27		7			7	7		50		-		10			-	3	7.8 49 25	7			7	77	34	23	9.33	E. E. Thornton. Geo. Ageris.
New Burnside Oak Ridge Mie		.10	.01		7/	26	15	7			7	177		40	52			75	50			70	- 1		4.7	7	25	10	7		4.57	Henry Bruihl
Paducah Ku			20		10.2.	1.53		7'			.16			47.1	44		.09	46	12				18		.08			7/	40	155	4.91	Henry Bruhl. Victor I Philips. Wm Borneman.
Paducah Ku Plum Hill Sh Charles Mo	-		.01		-	15	.41	02						. 72	.44 .50	7		36		1	7	1	74	.07		7	28	50		-	2.99	J. C. Saegas
Du John.	m		05		.29	22		./0	///	ca	7	7		70	10	177				77	7	43	10	1/	42	21	/	1/5		7	3.89	Grod freu Knelzgar
Di hours Illa	1		.04		10%	37	08 54 13	7'	/_	1.	/	التثا		30	40	-		08	40	4		15 8	0		.02 [.10	UL	4	1.12	50		3.81	La Chesney La Chesney La Chesney Groder Medizgar Hed Cronkerheld
Vincennes Ind.	.01		.04	T	18	.30	./3	.01	7	7'	.01	.01	.00	32	28	T	$\mathcal{T}$	26	./4	7	7' ]	15.8	5.01	7'.	.05	Ta	06	34	26	/3	3.46 4.33 3.86 4.57 3.69 4.91 2.99 2.23 3.89 3.60 1.84	7
State Averages	1.04	1.01	.03	1.0/	21		c.a			.03		T		.75	1.10	1/	17.7	/3]	.061	7. 1	<u>0/1.</u>	U 9	. Wea	Cher	.27.1	JU7L	42	471	DEL	V/1	1.67	
						. U.	4			447			2.								-						- 5					

## Observers' Notes.

(Continued.)

RILEY.—The month was 2.1° below normal of 35 years, the precipitation 0.54 of an inch below normal; an unusually dry month.

JOHN W. JAMES.

WHEATON. -Robins and other birds here on the 17th. WM. H. JOHNSON.

CHEMUNG.—Temperature of ground 33° at one foot in depth. Lightning struck a barn during the storm of the 28th. It burned, causing a loss of \$1,000.

Jos. Kuhles.

LANARK.—Some began to sow oats here on the 25th, about one week later than last year.

M. N. WERTZ.

ALEXANDER.—At the last of the month oats are being sown, ground very dry, sod being broken.

GEO. H. HALL.

HAVANA.—First steamboat arrived from St. Louis on the 5th.

J. M. RUGGLES.

LOUISVILLE.—On the morning of the 22d a very peculiar haze filled the air, it was probably dust brought from the West by the high wind of the 21st.

BELFORD A. JENKINS.

## Cron Rulletin for the Week Ending April 6th.

wonth, much below the in a few of the extreme southern counties along the Ohio river. Vegetation was held in check by the coolness and the crop season begins about ten days later than usual. Grain came through the winter in fair condition only, the freezing and thawing, with only light snow protection, injured it somewhat, but it is probable that the lack of rain last fall and the dry winter caused more harm. Wheat is in the best condition in the wet counties along the Ohio. Spring work began generally during the last week in March but was stopped by the cold weather the middle of last week and is just beginning again. Some oats have been sown but the crop will go in this week. Stalk cutting and plowing are also being pushed and much corn land will be prepared this week. Early gardens and potatoes are being planted. Grasses are coming on nicely, with the exception of clover. Fruits are thought to be unharmed and trees are ladened with bloom buds, which are bursting in southern counties. The soil is working well throughout the State although the subsoil is generally lacking in moisture.

### Miscellaneous Data.

Lunar Halos:—Cambridge 27th; Knoxville 20th; Riley 22, 27th; Scales Mound 2, 20th; Decatur 24th; Cobden, 25th; New Burnside 25th; St Louis 24th.

SOLAR HALOS:—Chicago 27th; Kishwaukee 3, 30th; Riley, 14, 21, 22, 24th; Scales Mound, 2, 14, 17,

22, 30th; Charleston 21, 27th; Hannibal 9, 12, 13, 17, 25, 27th; Morrisonville 17th; Rushville 9, 13, 17, 27, 29th; Springfield 9, 29th; Friends Grove 10th; Louisville 10, 13, 18, 21, 22, 27th; New Burnside 10, 17th; St. Louis 9th.

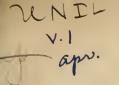
Auroras:—Ashton 4, 11, 13th; Chemung 4, 13th; Riley 4, 11th; Scales Mound 4, 12, 13th; St. Charles 4th; Winnebago 4th; Lexington 5, 11th; Rantoul 4th.

Fog:—Ashton 15, 18th; Aurora 6, 10th; Cambridge 5th; Galva 6th; Scales Mound 6th; Loami 6th; Palestine 6th; Rantoul 6th; Springfield 6th; Cairo 30th; Cobden 30th; Louisville 6, 29th.

SLEET:—Cambridge 5th; Chemung 5th; Dixon 5th; Monmouth 4th; Riley, 10, 18th; Scales Mound 5th; St. Charles 26th; Walnut 5th; Winnebago, 5th; Carrollton 22d; Hillsboro, 22, 23d; Lexington 5th; Palestine 5th; Rose Hill, 14, 18th; Tuscola 5th; Cairo, 3, 14, 15, 23d; Cobden, 3, 15th; Gordonville, Mo., 3d; Louisville 22d; New Burnside 3d; St. Louis 23d.

Hall:—Ashton 28; Cambridge 28th; Cazenovia 28th; Chemung 28th; Dixon 28th; Dubuque 31st; Keithsburg 27th; Kishwaukee 28th; Oregon 28th; Ottawa 28th; Riley 28th; Walnut 28th; Wheaton 26th; Winnebago 28th; Lanark 27th; Alexander 28th; Bushnell 27th; Kookuk 31t; Martinsville 28th; Rantoul 28th; Robinson 29th; Tuscola 28th; Iron 29th; Louisville 29th; McLeanboro 29th; New Burnside, 6, 29th; St. Charles, Mo., 28th; St. Louis 29th.

THUNDERSTORMS: -- Ashton 28th; Aurora 28th; Cambridge 28th; Cazenovia 28th; Chemung 28th; Chicago 28th; Clear Creek 27th; Dubuque 28, 31st; Joliet 28th; Kishwaukee 28th; Knoxville 27, 31st; La Grange 28th; Minonk 28th: Oregon 28th; Oswego 28th; Ottawa 28th; Reynolds 28th; Riley 28th; Round Grove 28th; Scales Mound 31st; St. Charles 28th; Sycamore 28th; Tiskilwa 28th; Walnut 28th; Wheaton 28th; Winnebago 28th; Lanark 27, 31st; Alexander 28th; Bushnell 27, 31st; Carlinville 28, 31st; Charleston 27th; Coatsburg 5th; Decatur 28th; E. Peoria 27, 28th; Frederick 28, 30th; Griggsville 27th; Hannibal, Mo., 31st; Havana 28th; Hillsboro 28, 29th; Keokuk 5, 28, 31st; La Harpe 28, 31st; Lexington 28, 31st; Loami 26, 28th; Martinsville 28th; Mattoon 28th; Morrisonville 27, 28th; Mt. Pulaski 28th; Palestine 6, 29th; Rantoul 28, 31st; Rose Hill 28, 29th; Rushville 5, 31st; Springfield 28, 31st; Tuscola 28th; Cairc 6, 30th; Cisne 29th; Cobden 28, 29th; Friends Grove 6, 29th; Herrin's Prairie 29th; Iron 6, 29th; McLeansboro 28, 29, 30th; Terre Haute 27, 28th; Mt. Vernon 28, 29th; New Burnside 29th; Plum Hill 28, 30th; St. Charles, Mo., 28, 29, 31st; St. John 22, 29th; St. Louis 28, 29th.



U. S. DEPARTMENT OF AGRICULTURE.

## Climate and Crop Service of the Weather Bureau.

ILLINOIS SECTION.

CHARLES E. LINNEY,
Observer, Weather Bureau,
Section Director.

REVIEW FOR APRIL.

WALTER S. PALMER,
Observer, Weather Bureau,
ASSISTANT

Chicago, Illinois, May 10, 1896.

The Month of April.

The month of April was one of unusual warmth; the average temperature for the State was 7.2° above the normal, and higher than any previous record since 1875. The first ten days of the month were comparatively cold, then followed a period of practically unbroken heat; the short cool period on the 21, 22d was the only one which in any way interrupted the warmth of the last twenty days of the month. The 15, 16, 17th gave generally highest the temperature of the month, and 90° or more was recorded in each section of the State during this period. The highest recorded was 95° at New Burnside on the 15th. The 2, 3, 4th were the coldest days of the month, when temperatures were generally below freezing throughout the State. The lowest temperature recorded was 13° at Kishwaukee on the 2d. Sharp frosts occurred generally throughout the southern section on the 3, 4th; the central section as late as the 7th to the 10th; and in the northern section on the 22d. Vegetation made very rapid advance after the 15th, and no very material damage resulted from the later frost.

The rainfall of the month was largely in the form of thunder showers of rather limited area, and much more frequent and heavy in the north section. Central and southern counties were considerably below the normal precipitation, southeast and east counties being especially lacking. The average for the State was 2.96 inches, which is 0.59 of an inch below the normal. The heaviest fall, 7.80 inches, occurred in the extreme northwest corner of the State at Dubuque, the least, 1.07 inches, occurred at Palestine, while just across the Wabash River at Vincennes, Indiana, but 0.59 of an inch fell. Snow fell in many counties throughout the north half of the State on the 7, 8th, and at a few stations exceeded eight inches.

There were 11, 12, 7, and 8 days, respectively, clear, partly cloudy, cloudy and rainy, the north section having ten rainy days. The prevailing wind of the month was south, with an average hourly velocity of 13.4 miles, and greatest velocity 60 miles from the south at Chicago on the 18th. The average air pressure for the month was 30.01 inches, highest 30.48 inches at Chicago on the 7th, lowest 29.46 inches at Davenport on the 13th.

Observers' Notes.

GALVA:—About eight inches of snow fell here during the night of the 7—8th, turning to rain during the morning of the 8th.

F. U. WHITE.

Lanark: — Vegetation is ten days earlier than May 1st, 1895; pastures good; rye, winter wheat and oats in fine condition; no corn planted here at the end of the month.

M. N. Wertz.

MINONK:—Oats, pastures and meadows are in fine condition; some few have begun planting corn.

O. M. DAVISON.

Monmouth:—On the 13th we had high wind all day, and about noon it seemed to threaten a tornado.

D. J. Strang.

RILEY:—The mean temperature of April was 7.1° above the mean of the past thirty-five years, and the warmest month which we have had in that time. The maximum temperature of the month was exceeded in '66, '73, '79, and '93.

JOHN W. JAMES.

Sycamore:—The mean of the past month was 4.9° above the mean of the past fifteen years, and 2.7° above any record in that period. Roswell Dow.

Mt. Pulaski:—The condition of growing crops and the ground was never better. Z. K. Wood.

LOUISVILLE:—This was an exceedingly dry and warm April, there being almost no rain until the 29th. Everything has made great progress.

Belford A. Jenkins.

(Continued on page 4.)

## Barometer & Wind,

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Meteorological Hara for april, 1896, State of Illinois,

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## Daily and Monthly Precipitation for April 1896. State of Illinois.

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Rantont, Robinson, Rose Hill k Rushylle, Springleld Fran Anule Ind. Uscola Warsaw		00	00	00	T' T'		7	2.08 -55 7 	22 /3 ./0 .89 .3/	7		25 /0 07	35 04 20 34 27 16 22	7	00	00 (		73	20 3 46 6 7 4 77 1 77 1 62 28 04 1	7	8	22 7 3/ 04 02 7 22	7		04 T T T	7	7	56 65 06 75 2.00 1.25 50 51 .69		1.28 4.47 1.38 1.68 1.16 2.11 4.45 1.91 1.41 1.30 1.67 2.90	H. G. Sheelis. L. B. Meyers. H. Tred. Brendel. H. B. Harr. H. Harr. H. Harr. H. Harr. H. H. Harr. H. H. Harr. H. H. Harr. H. H
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Rantoni, Robi nson, Rose Hill Rushwile Spring Feld Fire Anule Ind. Fuscola Warsaw Auerages. Southern Section.	.02		00	.00	7'	7	7	2.08 -55 7 	22 /3 ./0 .89 .3/	7		.25 .70 .07 .77	35 25 04 20 34 27 16 22 12 12	T	00.	00 .0		73	20 3 46 6 7 4 77 1 77 1 62 28 04 1	7	5.01	22 7 3/ 04 02 7 22	7	.00	04 T T T T		$\frac{T}{T}$	56 63 06 75 2.00 1.25 50 51 .57	7'	1.30	Trwin Lester.  DH Cox.
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Rantoni  Robinson  Rose Hill  Rushville  Spring field  First Abube Ind.  Varsage  Cuerages  Coline  Cairo  Coine  Coine  Coine  Coine  Coine  Cora  Creenville  Carenville  Correnville  Co	.02		.00	.00		01 17 7 29 7	7'	2.08 .55 .7 .129 .52 .28 .20 .25 .48 .05 .01	13 10 89 31 11 80 27	7	00	25 /0 .07 7	35 25 06 20 34 27 16 22 12 12 72 72 72 30 50	T	00	00.4		7	20 3 46 6 7 4 7 7 7 7 62 28 09 50 09 10 09 10 09 10 09 10 09 10 09 10 09 10 09 10 09 10 09 10 09 10 10 10 10 10 10 10 10 10 10	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	5.01	22 T 3/, 04 02 T 22		.19	04 T T T T 17 19 19 19 19 19 19 19 19 19	01	T T T	56 63 06 20 20 20 51 50 51 50 51 50 51 50 51 50 51 50 51 50 50 51 50 50 50 50 50 50 50 50 50 50 50 50 50	50	1.30 1.57 2.29 1.23 2.57 1.24 2.89 2.38 2.49 2.62 2.35 1.35 1.35 1.55	B. F. Michels. J. W. Buram. X. W. H. H. M. John Forgster. H. G. Michels. J. T. G. Michels. J. T. G. Michels. J. J. C. Galheart. W. J. S. Catheart. B. G. Jenhins.
Rantoni, Robinson Rose Hill Rushwille Peringteld Peringteld Varsay Varsa	.02		.00	,00		01 17 7 29 7	7'	2.08 .55 .7 .29 .28 .20 .25 .48 .05 .01 .03 .20	13 10 89 31 11 80 27 .05 .18 .80 .38	7	00	25 70 07 7	35 25 06 20 34 27 16 22 12 27 27 27 27 27 27 27 27 27 27 27 27 27	T	00	00.4		7	20 3 46 6 7 4 7 7 7 7 62 28 09 50 09 10 09 10 09 10 09 10 09 10 09 10 09 10 09 10 09 10 09 10 09 10 10 10 10 10 10 10 10 10 10	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	233 79 07	22 T 3/, 04 02 T 22		.00 26 .19 .47 .20 .08	04 T T T -03 -03 -19 -19 -19 -19 -19 -19 -19 -19 -19 -19	01	T T T	56 63 06 73 200 22 50 51 84 27 75 25 125 125 125 125 125 125 125 125 125	Ji	1.30 1.67 2.29 1.23 2.57 1.24 2.89 2.38 2.49 2.49 2.62 2.35 1.55 2.39 1.55 2.30	B. F. Michels. J. W. Buram. W. H. His. John Puck. John Forgsler. H. E. Michels. J. F. Maiors. T. J. Trovilian. L. M. Bean. M. S. Oudum. J. R. Harrison. W. J. S. Cathoark. B. O. Jenkins. W. J. S. Cathoark. B. O. Jenkins. D. C. Leitrock.
Rantoni, Robinson Rose Hill Rushwille Phringheld Pera Anabe, Narsaw Varsaw Varsaw Varsaw Cherages  Coldhern Section Cisne Coston Cisne Coston	.02		.00	.00		01 17 17 29 17 03 03 05 02 02	7	2.08 .15 .7 .29 .20 .28 .20 .25 .48 .05 .01 .03 .20 .7 .03 .20 .7	13 10 89 31 11 80 27	7	00	25 70 07 7	55 25 04 20 34 27 16 12 22 22 22 22 22 30 50 18 65 10 17 70 21	T	00	00.1		7	20 3 46 6 7 7 4 7 7 7 7 62 82 85 85 80 94 94 95 96 97 97 97 97 97 97 97 97 97 97	7	23. 22. 03. 7. 07. 07. 05.	22 T 3/, 04 02 T 22		.00 .19 .47 .08 .7	04 T T T 7 7 7 7 7 7 9 9 9 9 9 7 7 7 7 9 9 9 9	01	T T T	56 63 06 73 200 22 50 51 84 27 75 25 125 125 125 125 125 125 125 125 125	Ji	1.30 1.67 2.29 1.23 2.57 1.24 2.89 2.38 2.49 2.49 2.62 2.35 1.55 2.39 1.55 2.30	B. F. Michels. J. W. Buram. W. H. His. John Puck. John Forgsler. H. E. Michels. J. F. Maiors. T. J. Trovilian. L. M. Bean. M. S. Oudum. J. R. Harrison. W. J. S. Cathoark. B. O. Jenkins. W. J. S. Cathoark. B. O. Jenkins. D. C. Leitrock.
Rantoni, Robinson, Rose Hill k Rushville, Springfield, Fring Haute, Ind. Varsay,  Olithern Section, Clinian Cairo, Cisne, Colorada Cordanville, Morannille, Mo. Greenville, Cerrins France, Lorians Grove, Lorians Grove	.02		.00	.00		01 17 17 29 17 03 03 05 02 02	7'	2.08 .15 .7 .29 .20 .28 .20 .25 .48 .05 .01 .03 .20 .7 .03 .20 .7	22 13 10 89 31 11 80 27 .05 .80 .27 .27 .27 .27	7	00	25 10 27 7 03	35 25 04 20 34 27 22 12 27 22 72 27 22 72 65 10 40 65 10 40 65 10 65 10 65 10 65 10 65 10 65 10 65 10 65 10 65 10 10 10 10 10 10 10 10 10 10 10 10 10	T	00	00.4		7	20 3 46 6 7 4 7 7 7 7 62 28 09 50 09 10 09 10 09 10 09 10 09 10 09 10 09 10 09 10 09 10 09 10 09 10 10 10 10 10 10 10 10 10 10	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	23. 22. 03. 7. 07. 07. 05.	22 T 3/, 04 02 T 22	7'	.00 26 .19 .47 .20 .08 .7	04 T T T T -03 -17 -90 -90 -93 -93 -90 -93 -95 -95 -95 -95 -95 -95 -95 -95 -95 -95	01	T T T	56 63 06 73 200 22 50 51 84 27 75 25 125 125 125 125 125 125 125 125 125	Ji	1.30 1.67 2.29 1.23 2.57 1.24 2.89 2.38 2.49 2.49 2.62 2.35 1.55 2.39 1.55 2.30	B. F. Michels. J. W. Buram. W. H. His. John Puck. John Poresier. H. E. Michels. J. R. Maiors. T. J. Trovilian. L. M. Bean. M. S. Oudum. J. R. Harrison. W. J. S. Cathoark. B. O. Jenkins. W. J. S. Cathoark. B. O. Jenkins. D. C. Leitrock.
Rantoni, Robinson Rose Hill Rushwille Spring field Fire Adulte Ind. Varsan Varsan  Chiro Cisne Cairo Cisne Cairo Cisne Colonda Circums Colonda Cordonville Mo Carenylle Carens Colonda Carenylle Colonda Cordonville Condans Crove Consultation Cordonville Condans Co	.02		.00	.00		01 7 29 7 03 03 05 02 02	7	2.08 .55 7 .29 .28 .20 .28 .20 .24 .48 .05 .01 .7 .03 .20 .7	22 /3 /0 89 31 // 80 27 .05 .80 .27 .05 .80 .27 .05 .18 .80 .27	7	00	25 10 07 7 03 03	35 25 04 20 34 27 26 22 27 27 27 27 27 27 27 27 40 45 10 40 17 40 17 40 17 40 17 40 17 40 17 40 17 40 40 40 40 40 40 40 40 40 40 40 40 40	T	00.	00.4		7	20 s 46 6 7 7 7 7 1 62 28 04 0 8 08 08 08 08 08 08 08 08 08		23 22 03 7	7 T	7' 7	.00 26 .19 .47 .20 .08 7	04 T T T T 17 19 49 19 49 20 20 49 20 49 20 49 20 49 20 49 20 49 20 49 20 49 20 40 40 40 40 40 40 40 40 40 40 40 40 40	05	T T T T T T T T T T T T T T T T T T T	56 63 06 73 200 22 50 51 84 27 75 25 125 125 125 125 125 125 125 125 125	Ji	1.30 1.67 2.29 1.23 2.57 1.24 2.89 2.38 2.49 2.49 2.62 2.35 1.55 2.39 1.55 2.30	B. F. Michels. J. W. Buram. W. H. His. John Puck. John Poresier. H. E. Michels. J. R. Maiors. T. J. Trovilian. L. M. Bean. M. S. Oudum. J. R. Harrison. W. J. S. Cathoark. B. O. Jenkins. W. J. S. Cathoark. B. O. Jenkins. D. C. Leitrock.
Rantoni, Robinson Rose Hill Rushwille Spring field Fire Adulte Ind. Varsan Varsan  Chiro Cisne Cairo Cisne Cairo Cisne Colonda Circums Colonda Cordonville Mo Carenylle Carens Colonda Carenylle Colonda Cordonville Condans Crove Consultation Cordonville Condans Co	.02		.00	,00		01 7 29 7 03 03 05 02 02	7	2.08 .55 7 .29 .28 .20 .28 .20 .24 .48 .05 .01 .7 .03 .20 .7	22 /3 /0 89 31 // 80 27 .05 .80 .27 .05 .80 .27 .05 .18 .80 .27	7	00	25 10 07 7 03 02 7	35 25 04 20 34 27 22 12 27 22 72 27 22 72 65 10 40 65 10 40 65 10 65 10 65 10 65 10 65 10 65 10 65 10 65 10 65 10 10 10 10 10 10 10 10 10 10 10 10 10	T	00	00.4	000	7	20 s 46 6 7 7 7 7 1 62 28 04 0 8 08 08 08 08 08 08 08 08 08		23 22 03 7	22 T 3/, 04 02 T 22	7' 7	.00 26 .19 .47 .20 .08 7	04 T T T T 17 19 49 19 49 20 20 49 20 49 20 49 20 49 20 49 20 49 20 49 20 49 20 40 40 40 40 40 40 40 40 40 40 40 40 40	05	T T T 1.00 86	56 63 06 73 200 22 50 51 84 27 75 25 125 125 125 125 125 125 125 125 125	Ji	1.30 1.67 2.29 1.23 2.57 1.24 2.89 2.38 2.49 2.49 2.62 2.35 1.55 2.39 1.55 2.30	B. F. Michels. J. W. Buram. W. H. His. John Puck. John Poresier. H. E. Michels. J. R. Maiors. T. J. Trovilian. L. M. Bean. M. S. Oudum. J. R. Harrison. W. J. S. Cathoark. B. O. Jenkins. W. J. S. Cathoark. B. O. Jenkins. D. C. Leitrock.
Rantoni, Robinson Rose Hill Rushwille Spring field Fire Adulte Ind. Varsan Varsan  Chiro Cisne Cairo Cisne Cairo Cisne Colonda Circums Colonda Cordonville Mo Carenylle Carens Colonda Carenylle Carens Colonda Cordonville Con Consultation Cordonville Con Consultation Cordonville Con Consultation Cordonville Con Consultation Con Consultation Con Con Con Con Con Con Con Con Con C	.02			,00	0.5	01 7 29 7 03 03 05 02 02	7'	2.08 .55 .7 .29 .52 .20 .20 .25 .48 .05 .01 .7 .7 .7 .7	22 13 10 89 31 11 80 27 .05 .80 .80 .80 .80 .80 .80 .80 .80	7	00	25 10 07 7 03 03	35 25 26 20 34 20 34 27 46 22 72 72 72 72 73 65 65 10 65 10 67 77 75 77 75 77 75 77 75 77 75 75 75 75	T	000		000	7	20 s 46 6 7 7 7 7 1 62 28 04 0 8 08 08 08 08 08 08 08 08 08		23 22 03 7 7 7 7 7 7	7 T	7' 7	.00 26 .19 .47 .20 .08 .7 .16	04 T T T T T T T T T T T T T T T T T T T	05	T T T 1.25	56 63 06 73 200 22 50 51 84 27 75 25 125 125 125 125 125 125 125 125 125	50	1.30 1.67 2.29 1.25 2.57 2.57 2.25 2.36 2.26 2.26 2.26 2.26 2.26 2.26 2.26	B. F. Michels. J. W. Buram. X. W. H. L. M. J. W. Buram. X. W. H. L. M. John Buck. John forgsler. J. M. Michels. J. J. Trovillian. L. M. Bean. L. S. Osahum. D. R. Harrison. W. J. S. Gathearl. B. G. Jenkins. Dr. G. Leibrock. John Juda. Miss. H. M. Philips. T. Sheele. M. Gronbach. J. F. Sheele. M. Gronbach. J. F. Therles. Geo. Harris.
Rantoni, Robinson Rose Hill Rushwille Spring field Fire Adulte Ind. Varsan Varsan  Chiro Cisne Cairo Cisne Cairo Cisne Colonda Circums Colonda Cordonville Mo Carenylle Carens Colonda Carenylle Carens Colonda Cordonville Con Consultation Cordonville Con Consultation Cordonville Con Consultation Cordonville Con Consultation Con Consultation Con Con Con Con Con Con Con Con Con C	.02		00		.05	01 17 7 17 03 03 05 02 7	7	2.08 .55 .7 .29 .52 .20 .20 .25 .48 .05 .01 .7 .7 .7 .7	22 13 10 89 31 11 80 27 .05 .80 .80 .80 .80 .80 .80 .80 .80	7	00	25 70 27 71 03 44 02 7 7 30	35 25 04 20 34 27 16 22 12 12 12 12 12 12 13 10 18 10 17 50 17 50 17 17 50 17 18 18 19 19 19 19 19 19 19 19 19 19 19 19 19	T	000		000	77	20 3 46 6 77 4 77 7 62 28 28 20 1		23 22 03 7 7 7 7 7 7	7 T	7' 7	.00 26 .19 .47 .20 .08 .7 .16	04 T T T T T T T T T T T T T T T T T T T	05	T T T 1.25	56 63 06 73 200 22 50 51 84 27 75 25 125 125 125 125 125 125 125 125 125	50	1.30 1.67 2.29 1.25 2.57 2.57 2.25 2.36 2.26 2.26 2.26 2.26 2.26 2.26 2.26	B. F. Michels. J. W. Buram. X. W. H. L. M. J. W. Buram. X. W. H. L. M. John Buck. John forgsler. J. M. Michels. J. J. Trovillian. L. M. Bean. L. S. Osahum. D. R. Harrison. W. J. S. Gathearl. B. G. Jenkins. Dr. G. Leibrock. John Juda. Miss. H. M. Philips. T. Sheele. M. Gronbach. J. F. Sheele. M. Gronbach. J. F. Therles. Geo. Harris.
Rantoni, Robinson, Rose Hill k Rushville, Springfield, Fring Haute, Ind. Varsay,  Olithern Section, Clinian Cairo, Cisne, Colorada Cordanville, Morannille, Mo. Greenville, Cerrins France, Lorians Grove, Lorians Grove	0.2.			.00	0.5	01 17 17 29 7 03 03 02 02 02 02 02 02 02 02 02	7 .02 .01 .05 .7 .01 .20	2.08 .55 .7 .28 .28 .28 .28 .28 .28 .20 .25 .7 .03 .20 .7 .7 .7 .7 .7 .7 .7 .7 .7 .7	22 13 10 89 31 11 80 27 05 18 80 12 12 12 19 19 19 19 19 19 19 19 19 19	7	00	25 70 27 7 03 03 7 02 7	35 36 20 34 20 34 22 16 22 27 22 27 22 27 20 39 39 39 39 39 39 39 39 39 39	T	00	00.4	000	77	20 s 46 6 7 7 7 7 1 62 28 04 0 8 08 08 08 08 08 08 08 08 08		23 22 23 33 7 25 00 00 7 7 7 7 7 7 7 9 9	7 T	7' 7	.00 26 .19 .20 .08 .7 .16	04 T T T T T T T T T T T T T T T T T T T	05	T T 1.00 86 40	56 63 66 66 66 66 66 66 66 66 66 66 66 66	50	1.30 1.67 2.29 1.25 2.57 2.57 2.25 2.36 2.26 2.26 2.26 2.26 2.26 2.26 2.26	B. F. Michels. J. W. Buram. X. W. H. L. M. J. W. Buram. X. W. H. L. M. John Buck. John forgsler. J. M. Michels. J. J. Trovillian. L. M. Bean. L. S. Osahum. D. R. Harrison. W. J. S. Gathearl. B. G. Jenkins. Dr. G. Leibrock. John Juda. Miss. H. M. Philips. T. Sheele. M. Gronbach. J. F. Sheele. M. Gronbach. J. F. Therles. Geo. Harris.
Rantoni Robinson Rose Hill Rushville Spring held First Abube Ind.  Varsay  Climan Cairo Cisne Cobden The Comment Cisne Cobden The Comment Cora Cisne Cobden The Comment Cisne Cora Cora Cora Cora Cora Cora Cora Cora	.02			,00	0.5	01 17 17 29 7 03 03 02 02 02 02 02 02 02 02 02	7 .02 .01 .05 .7 .01 .20	2.08 .55 .7 .28 .28 .28 .28 .28 .28 .20 .25 .7 .03 .20 .7 .7 .7 .7 .7 .7 .7 .7 .7 .7	22 13 10 89 31 11 80 27 05 18 80 12 12 12 19 19 19 19 19 19 19 19 19 19	7	00	25 70 27 7 03 03 7 02 7	35 36 20 34 20 34 22 16 22 27 22 27 22 27 20 39 39 39 39 39 39 39 39 39 39	T	00_			7' 006	20 3 46 6 7 77 7 77 7 62 28 28 09 4 2 55 0 50 2 20 1	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	23 22 23 33 7 25 00 00 7 7 7 7 7 7 7 9 9	7 T	7' 7	.00 26 .19 .47 .20 .08 7 .16	17 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	05	T T 1.00 86 40	56 63 66 66 66 66 66 66 66 66 66 66 66 66	50	1.30 1.67 2.29 1.25 2.57 2.57 2.25 2.36 2.26 2.26 2.26 2.26 2.26 2.26 2.26	B. F. Michels. J. W. Buram. X. W. H. L. M. J. W. Buram. X. W. H. L. M. John Buck. John forgsler. J. M. Michels. J. J. Trovillian. L. M. Bean. L. S. Osahum. D. R. Harrison. W. J. S. Gathearl. B. G. Jenkins. Dr. G. Leibrock. John Juda. Miss. H. M. Philips. T. Sheele. M. Gronbach. J. F. Sheele. M. Gronbach. J. F. Therles. Geo. Harris.
Rantoni Robinson Rose Hill Rushwille Spring field First Anable Thria T	0.2 .06 .7'				.05 7	01 17 T 29 T 03 03 03 02 02 02 02 02 02 02 02 02 03 03	7	2.08 .55 .29 .28 .20 .28 .20 .28 .20 .28 .20 .28 .20 .28 .20 .28 .20 .29 .20 .20 .20 .20 .20 .20 .20 .20	22 13 10 89 31 11 80 27 05 .38 .80 .27 .38 .20 .12 .20 .12 .20 .14 .10 .10 .10 .10 .10 .10 .10 .10	7' 01	00	25 10 0 7 0 7 0 7 7 7 7 7 7 7 7	35 25 26 20 34 27 16 22 12 12 12 12 12 13 10 11 11 11 11 11 11 11 11 11	7 7 00				77	20 3 46 b 7 7 5 7 7 7 7 62 02 08 02 08 02 08 03 08 04 00 05 00 07 07 07 07 07 07		23 23 3 4 23 3 4 23 22 03 25 00 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	22 T 34 O4 O2	7' 7	26 19 47 20 08 7 16	04/7 T T T T T T T T T T T T T	03	T T T 1.25	56 65 200 200 125 50 51 .87 .25 .13 .25 .13 .25 .13 .25 .13 .25 .13 .25 .13 .15 .15 .15 .15 .15 .15 .15 .15 .15 .15	50	1.30 1.67 2.29 1.25 2.57 2.57 2.25 2.36 2.26 2.26 2.26 2.26 2.26 2.26 2.26	B. F. Michels. J. W. Buram. X. W. H. L. M. J. W. Buram. X. W. H. L. M. John Buck. John forgsler. J. M. Michels. J. J. Trovillian. L. M. Bean. L. S. Osahum. D. R. Harrison. W. J. S. Gathearl. B. G. Jenkins. Dr. G. Leibrock. John Juda. Miss. H. M. Philips. T. Sheele. M. Gronbach. J. F. Sheele. M. Gronbach. J. F. Therles. Geo. Harris.
Rantoni Rose Hill Rushwille Rushola Varsaw Carrages Coldhern Section Cisne Cohden Rushwille Rush Carra Corradon Cisne Corradon C	0.2 .06 .7'				.05 7	01 17 T 29 T 03 03 03 02 02 02 02 02 02 02 02 02 03 03	7	2.08 .55 .29 .28 .20 .28 .20 .28 .20 .28 .20 .28 .20 .28 .20 .28 .20 .29 .20 .20 .20 .20 .20 .20 .20 .20	22 13 10 89 31 11 80 27 05 .38 .80 .27 .38 .20 .12 .20 .12 .20 .14 .10 .10 .10 .10 .10 .10 .10 .10	7' 01	00	25 10 0 7 0 7 0 7 7 7 7 7 7 7 7	35 25 26 20 34 27 16 22 12 12 12 12 12 13 10 11 11 11 11 11 11 11 11 11	7 7 00				77	20 3 46 6 7 77 47 1 62 28 20 1 62 20 1 62 20 1 62 3 62 3 62 3 62 3 63 3 64 2 64 3 65 3 67 3 77 77 77 77 77 77 77 77 77 77 77 77 77		\$ 01 23 24 3 4 7 07 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	22 T 3/4 0/4 0/2 T 22 T 1/1 T T T T T T T T T T T T T T T T T	7' 7' 7' 7' 7' 7'	26 19 47 20 08 7 16	04 TT TT TT TT TT TT TT TT TT TT TT TT TT	05	T T T 1.00 86 40 80 T 16	56 65 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	50	1.30 1.67 2.29 1.23 2.57 2.29 2.32 2.49 2.62 2.35 1.79 2.35 1.79 2.35 2.35 1.79 2.35 2.35 1.79 2.35 2.35 1.79 2.35 2.35 1.79 2.35 2.35 2.35 2.35 2.35 2.35 2.35 2.35	B. F. Michels. J. W. Buram. X. W. H. L. M. J. W. Buram. X. W. H. L. M. John Buck. John forgsler. J. M. Michels. J. J. Trovillian. L. M. Bean. L. S. Osahum. D. R. Harrison. W. J. S. Gathearl. B. G. Jenkins. Dr. G. Leibrock. John Juda. Miss. H. M. Philips. T. Sheele. M. Gronbach. J. F. Sheele. M. Gronbach. J. F. Therles. Geo. Harris.
Rantoni Robinson Rose Hill Rushwille Spring field First Anable Thria T	0.2 .06 .7'	00 7	00		.05 7 .03 7 .7 .7	01 17 7 29 7 03 03 05 02 02 02 02 7 7	7'	2.08 5.5 7 1.29 2.8 2.20 2.48 0.5 1.48 0.5 1.7 7 7 7 7 7 7 7 7 7 7 7 7 7	22 13 10 89 31 11 80 80 18 80 18 19 19 19 19 19 19 19 19 19 19	7º	00	25 10 0 7 0 7 0 7 7 7 7 7 7 7 7	35 25 26 20 34 27 16 22 12 12 12 12 12 13 10 11 11 11 11 11 11 11 11 11	7 7 00		000 77	77	77	20 3 46 6 7 77 4 7 77 7 77 7 77 7 77 7 77 7 70 70 7 70 70 7 70 70 7 70 70 7 70 70 7 70 70 7 70 70 7 70 70 70 70 70 70 70 70 70 70 70 70 70 7		\$ 01 23 24 3 4 7 07 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	22 T	7' 7' 7' 7' 7' 03	26 19 47 20 08 7 16	04/77 77 77 77 77 77 77 77 79 19 19 19 19 19 19 19 19 19 19 19 19 19	05	T T 1.00 86 40 7 16 09	56 65 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	50	1.30 1.67 2.29 1.25 2.57 2.57 2.25 2.36 2.26 2.26 2.26 2.26 2.26 2.26 2.26	B. F. Michels. J. W. Buram. W. H. His. John Puck. John Poresier. H. E. Michels. J. R. Maiors. T. J. Trovilian. L. M. Bean. M. S. Oudum. J. R. Harrison. W. J. S. Cathoark. B. O. Jenkins. W. J. S. Cathoark. B. O. Jenkins. D. C. Leitrock.

#### Observer's Notes.

(Continued.)

Martinsville:—Oats growing well; some corn planted; never more blooms on peach, cherry, plum and apple trees; strawberries blooming; grass growing fine.

J. B. Sheapley.

MORRISONVILLE:—A thunderstorm from the southwest on the 21st, which blew down some wind-mills; rain and hail accompanied the storm.

HARRY GRUNDY.

NEW BURNSIDE:—A severe rain and thunderstorm visited this city on the 21st; several persons were severely shocked by a bolt of lightning.

GEO. HARRIS.

AURORA:—The average soil temperature at 6 A. M. was 49.7°, air temperature at same hour 46.6°. Highest temperature of the soil 64° on the 17 and 29th, lowest 32° on the 2, 3d. Chas. A. Love.

WHEATON:—Vegetation of all kinds is nearly three weeks ahead of any season in several years.

WM. H. JOHNSON.

#### Miscellaneous Data.

Aurora:—Chemung 21st; Lanark 3, 12th; Minonk 29th; Riley 3, 21, 22d; Scales Mound 21st; Winnebago 3d.

Lunar Halos:—Ashton 17th; Atwood 11, 17, 22, 25th; Hannibal 22, 24th; Palestine 22, 23d; Rushville, 24th; Springfield 24th; Cobden 19, 24, 26th; Louisville 26.

SOLAR HALOS:—Ashton 7th; Chemung 23d; Chicago 10th; Kishwaukee 29th; Minonk 23d; Riley 4, 5, 7, 11, 12, 14th; Scales Mound 11, 12th; Atwood 5, 7, 10, 11, 12, 13, 16, 17, 18, 23, 25th; Charleston 25th; Hannibal 25, 30th; Rushville 11, 16, 17, 18, 22d; Springfield 5, 11, 12, 17, 18, 25th; Friends Grove 7, 16, 25th; Louisville 7, 10, 25th; St. Louis 26th.

Fog:—Ashton 10th; Cambridge 27th; Galva 27th; Joliet 27th; Knoxville 9, 26th; Minonk 10, 11, 27th; Ottawa 27th; Walnut 27th; Alexander 27th; Bushnell 28th; East Peoria 27th; Hillsboro 27th; Keokuk 27th; Loami 27th; Rantoul 27th; Springfield 27th; Cobden 27th; Louisville 27th; St. Louis 27th.

SLEET: — Cambridge 8th; Knoxville 7th; Monmouth 7th; Reynolds 7, 8, 9th; Scales Mound 8th; Alexander 8th; Bushnell 6th; Decatur 8th; Hillsboro 8th; Loami 8th; Mt. Pulaski 8th; Rushville 7th; Springfield 8th; Tuscola 8th; Louisville 8th.

HAIL:—Aurora 20th; Cambridge 18, 29th; Davenport 10th; Galva 29th; Knoxville 13th; Lanark 13, 28th; Minonk 20th; Monmouth 20, 29th; Reynolds 10, 13, 20, 23d; Scales Mound 13, 20, 29th; Sycamore 20th; Tiskilwa 29th; Alexander 8, 29th; Bush-

nell 13th; Hillsboro 20th; Lexington 20th; Morrisonville 21st; Cairo 26th; Cobden 29th; Du Quoin 26, 28, 29th; Friends Grove 8th; Gordonville, Mo., 26th; Herrin's Prairie 26, 29th; Oak Ridge, Mo., 30th; Olney 8th; St. John 26th.

THUNDERSTORMS: - Ashton 10, 13, 20, 23, 29th; Aurora 10, 13, 20, 23, 24, 29th; Cambridge 9, 10, 13, 18, 20, 23, 26, 29th; Chemung 11, 13, 17, 20, 28, 29th; Chicago 10, 20, 24, 29th; Davenport 10, 13, 20, 23, 29th; Dixon 10, 17, 23, 24th; Galva 29th; Joliet 10th; Kishwaukee 10, 13, 17, 20, 23, 28, 29th; Knoxville 10, 13, 23, 24, 28, 29th; Minonk 20, 23, 24th; Monmouth 20, 29th; Oregon 10, 13, 23d; Oswego 10, 12th; Ottawa 10, 13, 20, 23, 24, 29th; Riley 13, 20, 26th; Reynolds 10, 13, 18, 20, 23. 29th; St. Charles 10, 13, 17, 20, 23, 29th; Scales Mound 10, 11, 13, 17, 20, 23, 26, 28, 29th; Tiskilwa 9, 10, 13, 20, 23, 24, 29th; Walnut 9, 10, 13, 20, 23, 29th; Wheaton 20th; Winnebago 10, 13, 17, 20, 23, 29th; Alexander 29th; Atwood 20, 21, 23, 29th; Bushnell 6, 13, 23d; Carlinville 20, 26, 29th; Charleston 20, 29th; Decatur 20, 29th; East Peoria 29th; Griggsville 8, 13, 20, 26, 29th; Hannibal 8, 9, 20, 21, 26, 28, 29th; Havana 29th; Hillsboro 20th; Keokuk 9, 10, 13, 18, 20, 26, 28, 29th; La Harpe 23d; Lexington 20th; Loami 29th; Martinsville 29th; Morrisonville 21st; Rantoul 20, 23d; Rushville 8, 13, 18, 23, 28, 29th; Springfield 1, 29th; Cairo 9, 21, 22, 24, 26, 27, 29th; Cisne 26, 29th; Cobden 21, 22, 26, 29th; Du Quoin 26, 28, 29th; Friends Grove 29th; Gordonville, Mo., 26th; Greenville 29th; Herrin's Prairie 26, 29th; Iron 29th; Louisville 20, 23, 26, 29th; McLeansboro 22, 26, 29th; New Burnside 21, 26, 29th; Olney 9, 20, 23, 29th; Plumb Hill 20, 29th; St. John 13, 22, 26, 29th; Mt. Vernon, Ind., 26, 29th; St. Louis 21, 26, 29th.

### Where Flowers Do Not Live.

There must be a wide difference in the geological formation as well as in the climate of the regions surrounding the two poles of the globe-that is, providing the flora of a country is an index to its climatic or geological conditions. Explorers who have had charge of the botanical work in both the arctic and antartic circles have recently met and compared notes, and from these comparisons we deduce the following curious information: Within the antarctic circle there has never been found a single species of flowering plant. In the arctic circle 762 different species of flowering plants have been collected and classified. Fifty of the above numbers are flowers of varied hue and of different degrees of odoriferousness; the remaining 712 are pale or entirely colorless, and with no perceptible perfume whatever. These latter are what the botanists term "types of true polar flowers."— Ex.

# Climate and Crop Service of the Weather Bureau.

CHARLES E. LINNEY,
Observer, Weather Bureau,
Section Director.

REVIEW FOR APRIL.

WALTER S. PALMER,
Observer, Weather Eureau,
ASSISTANT

Chicago, Illinois, May 10, 1896.

#### The Month of April.

The month of April was one of unusual warmth; the average temperature for the State was 7.2° above the normal, and higher than any previous record since 1875. The first ten days of the month were comparatively cold, then followed a period of practically unbroken heat; the short cool period on the 21, 22d was the only one which in any way interrupted the warmth of the last twenty days of the month. The 15, 16, 17th gave generally highest the temperature of the month, and 90° or more was recorded in each section of the State during this period. The highest recorded was 95° at New Burnside on the 15th. The 2, 3, 4th were the coldest days of the month, when temperatures were generally below freezing throughout the State. The lowest temperature recorded was 13° at Kishwaukee on the 2d. Sharp frosts occurred generally throughout the southern section on the 3, 4th; the central section as late as the 7th to the 10th; and in the northern section on the 22d. Vegetation made very rapid advance after the 15th, and no very material damage resulted from the later frost.

The rainfall of the month was largely in the form of thunder showers of rather limited area, and much more frequent and heavy in the north section. Central and southern counties were considerably below the normal precipitation, southeast and east counties being especially lacking. The average for the State was 2.96 inches, which is 0.59 of an inch below the normal. The heaviest fall, 7.80 inches, occurred in the extreme northwest corner of the State at Dubuque, the least, 1.07 inches, occurred at Palestine, while just across the Wabash River at Vincennes, Indiana, but 0.59 of an inch fell. Snow fell in many counties throughout the north half of the State on the 7, 8th, and at a few stations exceeded eight inches.

There were 11, 12, 7, and 8 days, respectively, clear, partly cloudy, cloudy and rainy, the north section having ten rainy days. The prevailing wind of the month was south, with an average hourly velocity of 13.4 miles, and greatest velocity 60 miles from the south at Chicago on the 18th. The average air pressure for the month was 30.01 inches, highest 30.48 inches at Chicago on the 7th, lowest 29.46 inches at Davenport on the 13th.

#### Observers' Notes.

GALVA:—About eight inches of snow fell here during the night of the 7—8th, turning to rain during the morning of the 8th.

F. U. WHITE.

Lanark: — Vegetation is ten days earlier than May 1st, 1895; pastures good; rye, winter wheat and oats in fine condition; no corn planted here at the end of the month.

M. N. Wertz.

MINONK:—Oats, pastures and meadows are in fine condition; some few have begun planting corn.

O. M. DAVISON.

Monmouth:—On the 13th we had high wind all day, and about noon it seemed to threaten a tornado.

D. J. Strang.

RILEY:—The mean temperature of April was 7.1° above the mean of the past thirty-five years, and the warmest month which we have had in that time. The maximum temperature of the month was exceeded in '66, '73, '79, and '93.

JOHN W. JAMES.

Sycamore:—The mean of the past month was 4.9° above the mean of the past fifteen years, and 2.7° above any record in that period. Roswell Dow.

Mt. Pulaski:—The condition of growing crops and the ground was never better. Z. K. Wood.

LOUISVILLE:—This was an exceedingly dry and warm April, there being almost no rain until the 29th. Everything has made great progress.

BELFORD A. JENKINS.

(Continued on page 4.)

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## Daily and Monthly Precipitation for April 1896. State of Illinois.

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Rantout, Rose Hill k Rushville, Spring Jeld Tirro Maute, Ind. Tuscola, Warsaw  Couthern Section, Ainon, Cairo, Ciste, Chage, The Quois Frend's Grove, Goldenda	0.2	2.00	00			7 .01 .77	7'	208 55 7 228 228 200 25 48	/22 /3 .10 .89 31 .11 .80 .27	7	00	(A) 2 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	5 5 6 6 0 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	00	.00	.00	./3 T	20 46 7 7 62 28 04 08 50 20	.10 .10	7 OS 1	77/	72 77 34 74 72 77	21	06 7 7 7 7 7 7 7 7 19 19 19 19 19	.O.I	77 T T	51 56 63 06 20 50 50 50 51 50 51 50 51 75 75 75 75 75 75 75 75 75 75 75 75 75	7'	1.80 1.67 2.29 1.23 2.57 1.24 2.89 2.38	B.F. Michels. J.W. Byram X
Rantoul, Rose Hill k Rushylle Epring Jella Jurca Raute, Ind. Warsaw Warsaw Warsaw Cairo, Cisne Cobden Lu Quan Plota Frends Grove Galcondag Gardonville Mo.	0.2	2.00	00			7 .01 .77	7'	208 55 7 129 28 20 25 48 05 01	7 22 73 70 89 31 11 80 27	7	00	10 2 2 2 5 10 2 2 2 5 10 2 2 2 5 10 2 2 2 2 5 10 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	5 5 6 6 0 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	00	.00	00	./3 T	20 46 77 77 62 28 04 08 50 20	.10 .10	7 OS 1	77/	72 77 34 74 72 77	21	06 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	.O.I	7 T	51 56 63 06 75 200 125 50 50 51 50 57 75 75 84 75 75 75 75 75 75 75 75 75 75 75 75 75	7'	1.80 1.67 2.29 1.23 2.57 1.24 2.89 2.38 2.49 2.62	B.F. Michels. J.W. Byram X
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#### Observer's Notes.

(Continued.)

Martinsville:—Oats growing well; some corn planted; never more blooms on peach, cherry, plum and apple trees; strawberries blooming; grass growing fine.

J. B. Sheapley.

MORRISONVILLE:—A thunderstorm from the southwest on the 21st, which blew down some wind-mills; rain and hail accompanied the storm.

HARRY GRUNDY.

NEW BURNSIDE:—A severe rain and thunderstorm visited this city on the 21st; several persons were severely shocked by a bolt of lightning.

GEO. HARRIS.

AURORA:—The average soil temperature at 6 A. M. was 49.7°, air temperature at same hour 46.6°. Highest temperature of the soil 64° on the 17 and 29th, lowest 32° on the 2, 3d. Chas. A. Love.

WHEATON:—Vegetation of all kinds is nearly three weeks ahead of any season in several years.

WM. H. JOHNSON.

#### Miscellaneous Data.

Aurora:—Chemung 21st; Lanark 3, 12th; Minonk 29th; Riley 3, 21, 22d; Scales Mound 21st; Winnebago 3d.

Lunar Halos:—Ashton 17th; Atwood 11, 17, 22, 25th; Hannibal 22, 24th; Palestine 22, 23d; Rushville, 24th; Springfield 24th; Cobden 19, 24, 26th; Louisville 26.

Solar Halos:—Ashton 7th; Chemung 23d; Chicago 10th; Kishwaukee 29th; Minonk 23d; Riley 4, 5, 7, 11, 12, 14th; Scales Mound 11, 12th; Atwood 5, 7, 10, 11, 12, 13, 16, 17, 18, 23, 25th; Charleston 25th; Hannibal 25, 30th; Rushville 11, 16, 17, 18, 22d; Springfield 5, 11, 12, 17, 18, 25th; Friends Grove 7, 16, 25th; Louisville 7, 10, 25th; St. Louis 26th.

Fog:—Ashton 10th; Cambridge 27th; Galva 27th; Joliet 27th; Knoxville 9, 26th; Minonk 10, 11, 27th; Ottawa 27th; Walnut 27th; Alexander 27th; Bushnell 28th; East Peoria 27th; Hillsboro 27th; Keokuk 27th; Loami 27th; Rantoul 27th; Springfield 27th; Cobden 27th; Louisville 27th; St. Louis 27th.

SLEET: — Cambridge 8th; Knoxville 7th; Monmouth 7th; Reynolds 7, 8, 9th; Scales Mound 8th; Alexander 8th; Bushuell 6th; Decatur 8th; Hillsboro 8th; Loami 8th; Mt. Pulaski 8th; Rushville 7th; Springfield 8th; Tuscola 8th; Louisville 8th.

HAIL:—Aurora 20th; Cambridge 18, 29th; Davenport 10th; Galva 29th; Knoxville 13th; Lanark 13, 28th; Minonk 20th; Monmouth 20, 29th; Reynolds 10, 13, 20, 23d; Scales Mound 13, 20, 29th; Sycamore 20th; Tiskilwa 29th; Alexander 8, 29th; Bush-

nell 13th; Hillsboro 20th; Lexington 20th; Morrisonville 21st; Cairo 26th; Cobden 29th; Du Quoin 26, 28, 29th; Friends Grove 8th; Gordonville, Mo., 26th; Herrin's Prairie 26, 29th; Oak Ridge, Mo., 30th; Olney 8th; St. John 26th.

THUNDERSTORMS: - Ashton 10, 13, 20, 23, 29th: Aurora 10, 13, 20, 23, 24, 29th; Cambridge 9, 10, 13, 18, 20, 23, 26, 29th; Chemung 11, 13, 17, 20, 28, 29th; Chicago 10, 20, 24, 29th; Davenport 10, 13, 20, 23, 29th; Dixon 10, 17, 23, 24th; Galva 29th; Joliet 10th; Kishwaukee 10, 13, 17, 20, 23, 28, 29th; Knoxville 10, 13, 23, 24, 28, 29th; Minonk 20, 23, 24th; Monmouth 20, 29th; Oregon 10, 13, 23d; Oswego 10, 12th; Ottawa 10, 13, 20, 23, 24, 29th; Riley 13, 20, 26th; Reynolds 10, 13, 18, 20, 23. 29th; St. Charles 10, 13, 17, 20, 23, 29th; Scales Mound 10, 11, 13, 17, 20, 23, 26, 28, 29th; Tiskilwa 9, 10, 13, 20, 23, 24, 29th; Walnut 9, 10, 13, 20, 23, 29th; Wheaton 20th; Winnebago 10, 13, 17, 20, 23, 29th; Alexander 29th; Atwood 20, 21, 23, 29th; Bushnell 6, 13, 23d; Carlinville 20, 26, 29th; Charleston 20, 29th; Decatur 20, 29th; East Peoria 29th; Griggsville 8, 13, 20, 26, 29th; Hannibal 8, 9, 20, 21, 26, 28, 29th; Havana 29th; Hillsboro 20th; Keokuk 9, 10, 13, 18, 20, 26, 28, 29th; La Harpe 23d; Lexington 20th; Loami 29th; Martinsville 29th; Morrisonville 21st; Rantoul 20, 23d; Rushville 8, 13, 18, 23, 28, 29th; Springfield 1, 29th; Cairo 9, 21, 22, 24, 26, 27, 29th; Cisne 26, 29th; Cobden 21, 22, 26, 29th; Du Quoin 26, 28, 29th; Friends Grove 29th; Gordonville, Mo., 26th; Greenville 29th; Herrin's Prairie 26, 29th; Iron 29th; Louisville 20, 23, 26, 29th; McLeansboro 22, 26, 29th; New Burnside 21, 26, 29th; Olney 9, 20, 23, 29th; Plumb Hill 20, 29th; St. John 13, 22, 26, 29th; Mt. Vernon, Ind., 26, 29th; St. Louis 21, 26, 29th.

### Where Flowers Do Not Live.

There must be a wide difference in the geological formation as well as in the climate of the regions surrounding the two poles of the globe—that is, providing the flora of a country is an index to its climatic or geological conditions. Explorers who have had charge of the botanical work in both the arctic and antartic circles have recently met and compared notes, and from these comparisons we deduce the following curious information: Within the antarctic circle there has never been found a single species of flowering plant. In the arctic circle 762 different species of flowering plants have been collected and classified. Fifty of the above numbers are flowers of varied hue and of different degrees of odoriferousness; the remaining 712 are pale or entirely colorless, and with no perceptible perfume whatever. These latter are what the botanists term "types of true polar flowers."— Ex.

REPORT FOR MAY, 1896

## ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

# WEATHER BUREAU.

WILLIS L. MOORE,

BY

CHARLES E. LINNEY,
OBSERVER AND SECTION DIRECTOR, CHICAGO, ILL.



Natural Fistery Survey

U. S. DEPARTMENT OF AGRICULTURE,

## CLIMATE AND CROP SERVICE

OF THE

## WEATHER BUREAU.

CENTRAL OFFICE: WASHINGTON, D. C.

WILLIS L. MOORE,

JAMES BERRY, Chief of Climate and Crop Division.

## ILLINOIS SECTION.

CHARLES E. LINNEY, Section Director, Chicago, III.

Vol. I.

CHICAGO, ILL.

No. 1.

#### INTRODUCTION.

We are pleased to present to our observers and correspondents our new and regular publication, suggestion of which was made in our issue of "Weather and Crops" for February. The latter publication, having served its purpose, has ceased to exist, and all climatic data issued for the Illinois Section will hereafter appear in the form of this publication. We shall regularly have eight pages, with a general data table, daily maximum and minimum and daily rainfall tables, and temperature and rainfall charts. The latter have been omitted this month owing to the lack of time to fully prepare all things connected with the publication. Owing to the limited size of our tables a few of our observers' reports have been crowded out, much to our regret; these, however, have all been used in the averages for the state and will all appear in the National Weather Review, with other data for Illinois Section. The columns for elevation, length in years of record and departure from normal, will be filled up as rapidly as data can be acquired and prepared for this purpose. Such aid as our observers can give us will be gladly received.

The month of May was one of many violent storms, which caused great loss of life and property within the State. Beginning with heavy thunderstorms on the 11th there was an increase in intensity to the storms during the 16-17, 19-20, 24-25, culminating in the awful disaster in the St. Louis storm on the 27th, which swept eastward leaving death and destruction through Madison, St. Clair, Clinton, Washington, Jefferson, Hamilton and other western counties of the southern portion of the State. It was most severely felt, of course, at East St. Louis, where 150 lives were lost and a fourth of the city of 15,000 people laid in ruins. New Baden, New Monden, Mascoutah, Mt. Vernon, Irvington, Birkner, Fairfield, Richview, Breckenridge and High Hill, in which 46 lives were lost, were other towns which suffered. The devastating storms which occured on the night of the 24-25th. throughout the northern counties of the State, though less

severe, and unmarked by great loss of life, still had, at many places, a distinct tornadic character, caused the loss of two lives and wrought destruction to much property. Collected reports show great intensity to these storms and much damage done in the line of counties from Carroll and JoDavieseastward to Cook. Extensive reports have been received from our Observers of these storms and it is regretted that lack of space prevents their publication.

Climatically the month was one of high temperature and heavy rainfall, in limited areas excessive. The average temperature exceeded the normal 7.7° and is the highest average which has been recorded since systematic records have been kept, 1875 to date. The great heat period of the month was from the 6th to the 13th, during which time maximums of  $90^{\circ}$ were frequently recorded and the highest temperature of the month 98°, occurred at Paris, on the 10th. Short period of low temperature occurred on the 3d, 14-15, 19-20th, and 29th to 31st. A light frost was reported at Ottawa on the morning of the 31st, but the lowest temperature of the month, 41°, occurred at Chemung and Zion. Heavy rainfalls were recorded in each section of the State, but 13.21 inches at Albion in the southern section exceeds that of any other station; the least fall for the month was 2.35 inches at Ft. Sheridian; Springfield had nearly as light a fall. The greatest fall in 24 hours recorded at any station was 6.00 at Kiswaukee on the night of the tornadic storm in that vicinity, when the above amount fell in 3 hours and 30 minutes, from 11 p. m. of the 24th to 2.30 a. m. of the 25th. Many other records of excessive and remarkable falls of rain are noted.

The average rainfall for the state was 1.42 inches above the normal, and has only been exceeded twice in the past twenty years, May of 1882 and 1892 being greater, the latter reaching the high figure of 8.14 inches. There was an average of 11 rainy days during the month, and 12, 12, and 7 clear, partly-cloudy and cloudy days respectively. The prevailing direction of the wind for the month was SW, although S appears nearly as frequent. The average hourly velocity was 10.2 miles; the greatest velocity 80 miles from the NW at St. Louis on the 27th. Velocites of 60 miles or over were also recorded at Chicago and Davenport. The atmospheric pressure average 29.93 inches; highest 30.24 inches at Chicago on the 23d, lowest 29.35 inches at St. Louis on the 27th. Compared with May of 1895 the month just passed averaged 5.7° warmer, but was below the maximum and above the minimum of last year. The severe cold period from the 14th to the 21st of May '95 preceded and followed by periods of great heat, made it remarkable for extremes of temperature. The month just passed becomes remarkable for the frequency and severity of its storms, and its heavy falls of rain.

The temperature of the soil at Aurora averaged 62.0° at 6 a. m., which is 3.1" above the air temperature at the same hour. The highest temperature was 72° on the 20th, the lowest 54° on the 3d.

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<sup>\*</sup> Trace, when precipitation is less than cor of an inch.

a. b, c, d, etc, number days missing.

## THE PROGRESS OF THE CROP SEASON.

Спісаво, Мау 11, 1896.

The past week has been one of high temperatures and lack of rain. The temperature touched 90° frequently and some fields have been plowed for corn. Corn is mostly in well, but tree fruits were somewhat damaged by high winds. and the early planted up, with a good stand generally, although cut worms are causing some damage. Grasses, potatoes and gardens are generally in good condition, with clover beginning to bloom. Fruits are still dropping quite badly and damage from foliage worms is still reported from southwest counties. Strawberries are being shipped from southern counties.

## Спісадо, Мау 18, 1896.

slightly more than seasonal warmth, averaging from 5° to proved highly favorable to crops after the extreme heat of the previous week. In many places the showers were heavy general poor condition in most southeast counties and some fields there are still being plowed up. The grain is generally headed out and is in bloom in southern counties. Rye is also headed and doing well. Oats are fine in north and south counties, but some fields are poor in central and a few have plowed up oats to plant corn. Corn planting is practically ended and early fields are up, with a good stand and cultivation is begun. Potatoes and gardens are doing well, 28th. also meadows and pastures. Fruits are still dropping badly and the general condition is less favorable.

## CHICAGO, MAY 25, 1896.

The temperature during the past week ranged from four to seven degrees daily above normal; rainfall was abundant, very heavy rains and a few severe local storms occurred in great damage to crops, buildings, trees, etc. limited areas, principally along the Illinois River. Wheat. where not previously beyond redemption, was much improved, but it is coming into bloom short. Rye and oats are 2.70 inches of rain fell in an hour during the storm. making rank growth. Corn is doing finely, but the fields are generally too wet for cultivation and becoming weedy. Early potatoes are being marketed in southern counties and blew down some windmills, chimneys, fences etc. are blooming in north; gardens are in fine condition and vegetables plentiful. Grasses have been somewhat injured by army worms; clover is nearly ready to cut. Fruits are generally improved by the wet and cloudy weather.

Note:—Reports of the storm of Sunday night and Monday morning indicate that it was limited to the northern portion of the state, where very heavy rain and high winds occurred, causing damage to small buildings, windmills, shade and fruit trees and standing crops.

## Chicago, June 1, 1896.

The past week was one of nearly normal temperature although it seemed cool, and of frequent showers, heavy in limited areas of the northern and over most of the southern section. The violent storm of the 27th devastated a con-

siderable portion of the southwest part of the state and spread eastward and northward to the east line and to Pike and Champaign Counties. The storm of the 28th was limited to the extreme south of the state and was less severe. Much of the southern and the southwest part of exceeded the normal from 10° to 18° daily. Crops have the central section, is too wet for cultivation or good growth, generally advanced rapidly, with little bad effect from the and is causing some rust in wheat; the grain is generally in great heat and lack of rain, but there is now much need of fair condition however and practically ready for the binder. rain throughout central counties and showers would aid the Rye also is nearly ready to cut and oats are heading rapidly; entire state. Wheat is heading rather short and shows grasses are generally in good condition, little harmed by considerable damage from the dryness and chinch bugs; the army worm, and clover cutting has begun in southern it is poorest in the southeast counties and some fields there counties. Corn cultivation continues where fields are dry are being plowed up or pastured. Rye is heading finely in enough, but some planting and replanting is yet to be done. north counties. Oats are not doing as well as last week and Gardens and potatoes are excellent; small fruits promise

## CHICAGO, JUNE 8, 1896.

The past week has been very favorable for farm work and growth; showers were frequent and temperature nearly normal, cool the first half and warm the last half. The heavy thunderstorms of Sunday seem to have been limited to small areas in the central and north counties. Crops have made rapid growth, corn especially, much of it is rather weedy from too wet fields. Oats are generally in excellent Throughout the state the past week has been one of condition, although of rank growth, and are heading well. Rye is being cut in early fields and promises well, little 8° daily above the normal, which, with frequent showers damaged by rust. Wheat cutting continues in southern counties and is beginning in central. Pastures and meadows are generally good: old timothy fields are thin but young and of much b nefit. Wheat in north and central counties fields good; clover cutting is progressing. Potatoes and garis much improved, also in the west portion of the southern dens are doing finely, early potatoes setting heavily. Fruits section, but injury by bugs, dryness and heat has caused a are fair, tree fruits somewhat whipped off by the storms; blackberries and raspberries are being marketed in south counties and strawberries and cherries in north.

## OBSERVERS NOTES.

Paris.—Severe wind, thunder and lightning on the L. B. MYERS.

Zion.—The wind of the 25th did immense damage to buildings, orchards, barns, etc. ROBT. MCGRATH.

Рипо.—A wind storm passed over this section on the 27th, fruit trees were slightly damaged. H. A. Burr.

PLUM HILL.—A tornado in this vicinity on the 26th, doing

J. A. CHESNEY. ATWOOD.—An awful storm from the northwest on the 21st:

J. W. C. GRAY.

Oswego.—On the 24th very heavy wind, and a little hail;

J. S. SEELY.

Kankakee.—Severe thunder-storm on the 25th at 4 a. m. which uprooted trees, took off roofs and blew down barns.

E. A. Bellamy.

Monmouth.—A heavy thunder-storm here on the 16th, with high wind. As near as I can tell one inch of rain fell in about a half hour. D. J. STRANG.

Mascoutan.—A tornado here on the 27th at half past six: many buildings down, and shade and orchard trees uprooted; one boy killed. DR. G. LEIBROCK.

Morrisonville.—A high wind on the 16th, blew down trees and destroyed a few outbuildings. The electric display on the 27th was fine. HARRY GRUNDY.

## SUPPLEMENT TO THE REVIEW FOR MAY, 1896.

## ILLINOIS SECTION.

In another column of this supplement we present a long and full discussion of the effect of tile drainage upon rainfall. Mr. Lewis, in explaining the subject, gives a brief but excellent discussion of the formation and movement of storms. The article is one which should receive careful study by each of our voluntary observers or reporters who wishes to know more about the climate of the great central valley, and the causes which produce it.

In connection with the article on "Tile Drainage and Rainfall," which appears in another column of this supplement, it is interesting to note that in a series of observations taken in '87-'88 by the Weather Bureau, the following was found to be the possible evaporation for the year in inches at the stations named: Chicago, 36.8 inches; Springfield, 40.8; Cairo, 48.9; St. Louis, 52.2; Davenport, 39.0; Des Moines, 36.0; Dubuque, 33.2; St. Paul, 28.1; Milwaukee, 29.0; Detroit, 36.0; Cincinnati, 52.0; New York, 40.6; New Orleans, 45.4; Denver, 69.0; San Francisco, 36.7; Los Angeles, 37.2. The figures were determined by computations from the means of the tridaily determinations of dew-point and wet-bulb observations.

The proposed upper-air meteorological observations begin to seem probable. One of the observers connected with the Weather Bureau at Washington has constructed a kite of new and unique design which will carry the registering instruments to a sufficient height to secure fair results. This kite consists of two sets of horizontal planes forming two diamond shape boxes, without top or bottom, the two boxes are fastened together, with light but strong framework, at a distance of about a foot. The wind surfaces of the kite will be of fine silk and the frame light wood; the flying cord is attached to the upper diamond and the meteorological instruments will probably be carried on a light framework between the two diamond frames forming the kite.

In apparent anticipation of the success which now seems to have been attained in the way of a carrying appliance, Mr. S. P. Ferguson, of the Blue Hill observatory, has invented a multiple recording instrument whereby pressure, temperature, humidity and other data are accurately registered for many weeks by one small, compact instrument. The possibilities which the latter instrument expose to view in continuous and correct meteorological records in mountain observatories, on isolated peaks, in anchored balloons, on deserted and hardly accessible points, islands and uninhabited lands, are beyond estimation, and call most forcibly to mind the fact that invention in the meteorological field is not yet exhausted. In fact a large field is still open and good returns are assured to him who will succeed in the work.

It is not sufficient that we dig a hole in which to set a young tree. The soil should be plowed as deeply as its nature will admit, and if there is a retentive subsoil, a subsoil plow may be used to advantage. When the whole surface is mellowed it is put in the best shape for the collection and retention of plant food.

Irrigation is not possible in all regions, but improved methods of preparing the soil to stir up the moisture which nature sends, and to conserve it until needed by trees and plants, are open to all of us. Nurserymen are familiar with the advantages of work in plowing land intended for their trees and shrubs.—

Western Plowman.

The richness and productiveness of French soil is proverbial. Here is a soil which has been in use for centuries, and it is as rich to-day as when pierced by the first rude plow. It shows that the French farmer has got farming down to a science, and it demonstrates the hollownesss of the plaint in parts of our country about our soil being exhausted. The French farmer studies his soil as the mariner does the weather. He knows how to nourish his land. He knows what particular spot will best produce wheat, and what corn, or vegetables; he knows how to fertilize his land and when to rotate his planting so as not to make one piece of land grow the same thing year after year. It is because of all this that he is so successful; and it is because of the French farmers' success that France is so rich.—Chicago Journal.

#### How to Use the Weather Reports.

Mr. W. H. Richardson, of the Ohio Climate and Crop Service, gives in *Orange Judd Farmer* the following suggestions on the uses which can be made of the weather reports. The suggestions given thus briefly may be enlarged upon to suit the needs of each individual community:

The United States Weather Bureau, as first organized in 1870, was under the auspices of the army, and the duties of making weather forecasts and collecting and compiling climatic data, etc., were performed through the medium of the signal corps. In 1890, in order to place the bureau in a wider field of usefulness and to make it of even greater value to agricultural and other interests, Congress transferred the Weather Bureau to the United States Department of Agriculture; since then it has grown into what is now one of the most important bureaus under the government, and the wisdom of the transfer has been fully verified. The law provides, among other things, that the Weather Bureau shall have charge of forecasting the weather, of the issue of storm warnings, the display of weather and flood signals, the reporting of temperature and rainfall conditions for the cotton interests, the display of frost and cold wave signals, and the distribution of meteorological information in the interests of agriculture and commerce.

In farming, market gardening or floriculture, the question of the probable condition of the weather is, and always will be, a matter of vital importance. First and last, as every one knows, the effect of the weather upon crops is a consideration that cannot be avoided, and a foreknowledge of the probable weather conditions, combined with a common sense discussion of what has already occurred in the past, should not be underestimated in value. The average success in verification of every day forecasts made by the Weather Burean is about 85 out of 100, while, on the other hand, even greater success is achieved in forecasting decided changes in weather conditions, the percentage of accuracy being about 95. These percentages are certainly high enough to inspire confidence to a large degree.

The applications of this foreknowledge (where obtainable) are many and varied, each person being supposed to utilize the information as best suits his individual needs. Suppose, for instance, that your hay is ready to be cut. Being notified that rain would probably occur on the morrow, it would naturally be to your interest to defer cutting until fair weather conditions had been forecasted,-which might be for the day following. By delaying the cutting of your hay under these circumstances, would you not be somewhat ahead by the transaction? Your hay, as a crop, would certainly be of much more value than if rain had fallen upon it after being cut. Ou the other hand, if when you are cutting you knew that almost to a certainty fair weather was assured, you would cut down a much larger acreage and go at the business more on a wholesale basis. The greater the scope in which any work is carried in, the cheaper it can be done. The same application can be made to seeding, as deference to promised showers would greatly assist in soil preparation and seed germination.

Frost predictions are also very advantageous where attention is paid to them, as it is now practicable to guard against frost when it is known to be on the way. In the winter months, cold wave and storm warnings are of great value, especially as regards the welfare of live stock, or the shipment of perishable products.

Farmers who reside near cities and towns can derive the benefit of early forecast information as transmitted by mail, telegraph or telephone service, but there remains that large part of the rural population who are not as yet within hailing distance. The Weather Bureau is using its best efforts toward a solution of this very problem, and it is lakely that the near future will bring forth new methods whereby the forecasts can be utilized also by the farmer who is even now "ten miles from a lemon,"

One of the best solutions of the problem of reaching the farmer in the more isolated districts is by sounding whistle signals of weather changes. This is done through the means of a code of signals adopted by the Weather Bureau. The signals can be blown at a specified time each day, by some factory in the vicinity. These signals can be heard many miles distant, and come to be looked for regularly. Correspondence in regard to this matter is desired, and full particulars can be obtained of the Weather Bureau office at the capital of each State

#### Tile Drainage and Rainfall.

The frequent inquiry for rainfall data, the prevailing opinion that our seasons are changing, that tile drainage, or something else, has caused a diminution of rainfall, and a desire to give an exhaustive and clear understanding of the effect of local evaporation upon rainfall causes us to publish the following excellent article from the pen of our observer, Mr. Thos. C. Lewis, of Reynolds, published in *The Aledo Press*, on the 20th of September last:

TO THE EDITOR OF THE PRESS: Vour inquiry as to the probable relation of tile drainage to our apparent diminished rainfall of the past two or three years has engaged my attention for some time and after a thorough investigation of the subject I am able to reach the conclusions indicated in this article and to submit the arguments on which these conclusions are based.

I have drawn upon the reports of the United States Weather Bureau very largely for my information and have also had access to the writings of Mr. J. R. Sage, of Des Moines, whose arguments I have used very freely. Mr. Sage is the director of the Iowa State Weather and Crop Service, and is competent anthority. He has given much observation and careful attention to the subject of tile draining in its relation to weather couditions. I am also much indebted to Mr. Chas. E. Linney, the director of the Illinois Climate and Crop Service, for valuable information.

We frequently see items going the rounds of the newspapers to the effect that tile draining of our wet and swamp lands has seriously and permanently affected our climate, and especially our average rainfall. Some of these items purport to be founded upon reports or statements of the United States Weather Bureau. So far as I have been able to learn, the United States Weather Bureau has never made any specific statement or report on the subject, but whenever it has given expression of opinion, through its trained observers, it is to the effect that it deems the tile draining of wet lands as a permanent improvement which should be encouraged, and that such drainage of the land does not effect weather conditions, nor can it have any effect on our rainfall.

Whenever there is a continued period of extreme or excessive weather of any kind, people are ready to believe that the

climate is permanently changing. It is getting permanently hotter or colder or dryer or wetter, as the conditions prevailing seem to justify.

Mr. Sage, the gentleman to whom I have before made allusion, calls to mind that in a certain locality where he was at the time a resident, a very severe and long continued drouth had prevailed and the farmers had arrived at the conclusion that the weather had permanently changed. They placed as the cause the telegraph wires and the rail-road tracks and it was seriously proposed to ask government authority for their removal. But in the meantime a copious shower drowned out these opinious and the weather of that region resumed its normal average.

Now, the question is being seriously discussed as to the cause for the apparent change of our climate. Telegraph and telephone wires, wire fences and tile draining, especially the latter, are held to be the cause of the supposed change. Wiggins, the false weather forecaster, has expressed this belief and others in the absence of information on which to base a more intelligent opinion, are ready to believe with him. It is the intuition of the human mind, which is as universal as human life, that there must be a cause for an effect, and not having at hand the information as to the real cause of the prevailing extreme we are ready to accept the first explanation offered, if it has in it the least apparent merit of plausibility.

The fact is our climate has not permanently chauged. The climate of the future will be the climate of the past and the average or the extreme of the last 25 or 50 or 100 years is a prophecy of the average or the extreme of a like period of the future.

The opinion that tile draining has caused a diminution of rainfall is based on the presumption that local evaporation is the cause of local rainfall, or largely contributes to it, which is not the case. If local evaporation is a necessary autecedeut to local rain, then we might suppose that the diminished local evaporation would cause a diminished rainfall. Evaporation must precede precipitation, but the water taken up by the air is precipitated hundreds, perhaps thousands, of miles from where it was evaporated. This is to be considered in connection with the question of local evaporation, for the water that is evaporated in this locality may not be precipated until the winds have drifted it thousands of miles from us. It is also to be considered that much of the water that is brought to the surface is not carried away as we are left to assume, but is evaporated more rapidly by reason of the exposure to sun and air. Hence tile draining would conserve instead of retard evaporation.

Then again, if local evaporation effects local precipitation, we might expect an investigation to disclose that localities adjacent to large bodies of water would be exempt from drouth, but such is not the case. Northern Iowa and the State of Minnesota have a large number of lakes, Michigan is almost surrounded by the great lakes, yet these States have suffered with drouth as well as we.

Following the subject still further in this direction, we might expect to find that States and localities adjacent to large bodies of water would not only be exempted from drouths, but that the annual average rainfall would be much greater than that of interior localities. This is not the case. Wisconsin has an average rainfall of thirty-two inches, Michigan thirty-three inches, Minnesota twenty-six inches and California twenty-two inches. The states named, except the latter, are adjacent to the great lakes, and California has almost half of her boundry upon the Pacific Ocean, and these States, if local evaporation has any effect upou local rainfall, would be supposed to have a much larger annual rainfall than Iowa

or Illinois, but such is not the case, for Illinois has an average of thirty-eight inches and Iowa about thirty-three inches.

An investigation of the facts as applied to the eastern hemisphere shows the same results. England, an isle of the sea, should be exempt from all danger of drouth, but she is affected by extremes of wet and dry as we are. Egypt, adjacent to the Mediterraneau and the Red Seas, has no rain at all, there being a record of an average of but one inch per year at Cairo, and none at Thebes. India, with more than half her boundary on the shore of the sea, has had many serious drouths and famine and thousands have died of hunger.

That large bodies of water have some effect upon the local rainfall cannot perhaps be wholly denied, but that local rainfall must of a necessity be the consequence of local evaporation is heresy. The records frequently show that while the territory adjacent to large bodies of water is having a poverty of rain, the interior has an abundance. The records of the earlier part of this season ('95) show that while the eastern portion of the country, near large bodies of water, had a serious and continued drouth, the treeless plains of Nebraska, Kansas and the Dakotas had copious showers.

It is estimated that not more than five per cent of the land has been drained by tiles, and are we to believe that this five per cent if not drained would furnish the moisture for the other 95? It is incredible. The results are too vast to be the consequence of so small and insignificant a cause.

The average rainfall of the entire United States is about thirty-six inches. This average is constant, and there is but very little variation. The cause of the extreme dry weather of the past year or two is to be found in the unequal distribution. The extremes of weather cannot be accounted for. They are not general but local. While one part of the country is suffering for moisture, another part has excessive precipitation. These extremes seem to come in groups or series, but not with sufficient regularity to justify a generalization on which to base a prediction.

Other countries and at other times than ours have had the experience of these extremes of climate. They prevail for a time and then the weather resumes its normal condition. Countries that to-day are known to be fertile and productive have known drouth and famine and thousands have died of hunger. In the year 310 hardly a drop of water fell in England and many people died of famine. In 954, a drouth began in Europe which lasted four years. The summers were intensely hot and famine prevailed everywhere. Thousands of people died of hunger. In 1771, a drouth prevailed in India. Scarcely any rain fell for a year and thousands died of famine. Whole districts were depopulated. In 1837 drouth and intensely hot weather prevailed in part of India. In 1865 and 1868 drouth and famine caused much suffering and many died of hunger. These countries are not all dried up nor has the climate changed, as many at the time no doubt supposed, nor were these extremes caused by tile drainage or by telegraph and telephone poles and wire fences. No human agency can cause a lack of rain, or couversely, cause it to rain.

Mr. Sage, whom I have so frequently quoted, has made a computation of the amount of water in volume, which the deficiency in the rainfall of Iowa for the past year and a half would make. He estimates that this deficiency, which is about nineteen inches, would require a basin to contain it fifty miles wide, 110 miles long, and sixteen feet deep. If compared in volume to a river, it would make a river one mile wide, sixteen feet deep and more then 5,000 uniles long. This is merely the deficiency. Now if all the drain tiles in the State were turued into the Mississippi, would they be expected to raise the

height to any considerable extent? And yet it is seriously claimed and believed by many intelligent people that the drainage of the land has been the cause of this diminished precipitation of the past two or three years. The deficiency of the State of Illinois for the past year and a half is about the same as for Iowa, and as the area of Illinois is but little greater than Iowa, the comparison will hold approximately for this State.

If local evaporation is a necessary antecedent to local precipitation, then we might expect the prevailing weather to perpetnate itself. When it began to rain it would tend to keep on raining. It would keep on evaporating and precipitating continually, and *vice versa*, when a drouth prevailed it could never rain again, for where would the water be obtained to prime the pump?

If, however, local evaporation has no effect on precipitation, then whence do we derive the moisture necessary to fertilize and make productive this vast basin known as the Mississippi valley? The moisture comes from the ocean. It is the supply and maintenance of all the lakes and rivers. Were it not for the moisture brought to them from the ocean every lake and river would soon be an empty basin. In an article like this the limits are too confined to justify an elaborate explanation of the process involved, and it will be enough to say that the water that supplies this vast valley and makes it the most rich and productive country of the same area on the face of the earth, comes from the ocean, carried here on the wings of the wind. It is probably true that every drop of water that has fallen in this fertile basin has come from the sea. The Gulf of Mexico is the great fountain whence is drawn this life-giving fluid which supports millions of human lives.

There cross our continent from West to East at an average rate of about five to seven per uionth, areas of low air pressure known in Weather Burean talk as "lows." These lows probably originate in the Pacific Ocean, maybe by the Japan currents of the North Pacific Ocean. They cover an area in extent from two hundred to five hundred miles across, but they are sometimes much more extensive than I have stated. These lows are cyclones in the language of meteorology, because the winds blow around the center from all directions. The air being much lighter as the center is approached, the heavier air from the outside is, by the laws of gravity, drawn from all directions, within a certain radius within its influence, toward the center. This causes the wind to blow, and the winds from the south, freighted with moisture gathered from the sea are brought to us and coming into contact with cooler currents of air, the moisture is condensed and precipitated. When the wind blows from a warm region into a colder region it will rain, but when the wind blows from a colder into a warmer region it will not rain. Air has a capacity for moisture depending upon its temperature. At a temperature of sixty degrees the air when saturated, can carry about six grains of the vapor of water to the cubic foot; at a temperature of seventy degrees its capacity is increased to about ten grains, and at eighty degrees of temperature to about eleven grains. The air is never entirely saturated nor ever entirely dry and the quantity of moisture it contains is a variable quantity, but the space at my disposal is too short to discuss this further. Now it will be seen that the air from the south, drawn hither with its moisture gathered under the sun of the tropics, coming into contact with the colder atmosphere from the north, will be cooled and as its temperature is lowered its capacity for moisture is lessened and it must part with some of it because it cannot carry it and so it rains because it cannot help itself.

This valley is a vast trough open from the south to the north and with no serious impediment to the air currents drawn hither, as I have before explained. Hence we have the best watered and the most extensive area of fertile country there is in the world. We are located midway in the path of these currents, and this is why we have as a rule an abundance of moisture while others go dry.

The "lows" are not always attended with precipitation. Sometimes the rainfall is considerable, and at others there is little or no rain. The reason is probably that there has not been the contact of the colder and warmer air so as to cause rain, or the gradients are not sufficiently sharp to draw in the air with its moisture from the south.

These "lows" sometimes are too far north or too far south of us to bring the rain here. Mr. Sage has noted that during the drouth of the past two years the number and frequency of the "lows" have not been on the average less than usual, but their direction was changed. So we see that the causes which make rain and determine our weather conditions, originate thousands of unless from us and perhaps on the other side of the earth.

The topography of the country has more to do with determining what our weather will be than local bodies of water and the evaporation from them. I have shown that desert conditions may and do exist adjacent to the sea where there is hot sun and all the conditions seemingly necessary for rain, but no rain falls because there is no way to condense and precipitate it. On the other hand our location, far inland though it be, has an average fall of rain sufficient for all our needs could we get it in installments as we need it. If there were interposed a lofty range of mountains extending from east to west across this Mississippi basin and between us and the Gulf of Mexico, this fertile valley would become a desert waste and as arid as Sahara. If the winds which reach us from the Gulf of Mexico, whence is derived about 98 per cent of our rainfall, had to cross a range of mountains to reach us, the cooler air of the mountain height would condense the moisture and the clouds when they reached us would be wrnug dry. This is why the country just east of the Rocky Mountains is without rain.

The energy which does all this work is the snn. Think of the power required to lift vast bodies of water from their bed, the ocean, transport them thousands of miles and distribute them to the thirsty earth. This water must be borne back to the ocean again or it would soon dry up. So every tile and creek and river is bearing back to the ocean the water brought to us on the wings of the wind. Old Sol is a cruel monster who shines without mercy on a hot August day, but he is at work making vapor of the water and making the wind to blow, which, freighted with moisture, brings hope and life and joy to millions.

Let the farmer go on and tile his land and be assured he will some of these days need the drains to carry away the surplus of moisture, the moiety of which he now craves. The average of the years will be maintained and this valley will, as long as the sun shines and the winds blow, be the best watered and the most fertile valley on the face of the globe.

It is to be remembered that the seasons when good crops are the reward of the farmers' toil are not the wet ones. The greatest production is obtained in the comparatively dry seasons. It has been said that in dry years the farmer is scared to death, and in wet ones he is starved to death.

The U. S. Weather Bureau is doing a grand work for the future farmer. It is experimenting, observing and generalizing, and it is not entirely beyond the range of probabilities, that the basis is being obtained for generalizations which will make it possible to make forecasts for months in advance instead of for hours as at present.

REPORT FOR JUNE, 1896

## ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

# WEATHER BUREAU.

PREPARED UNDER THE DIRECTION OF

WILLIS L. MOORE,

CHIEF OF BUREAU.

BY

CHARLES E. LINNEY,

OBSERVER AND SECTION DIRECTOR, CHICAGO, ILL.



Natural History Survey Library

Mean Temperature, June 1896. Mullenry Lake Garroll Lee Buttan Rock T Grunds STAFK Lyingston Knox Peoria 111ason Schuller Menara Adams Brown Sougras Santagree Morgan Edgar Charatian artene Montgomery Jersey Fagette Central and Southern Scotions Bortal Richland Lanrence Marjon Wayne Washington Monroe Jefferson Rendolph Perry Hamilton White Saline Gallatin Hardin Union Johnson Pope

U. S. DEPARTMENT OF AGRICULTURE,

OF THE

## WEATHER BUREAU.

CENTRAL OFFICE: WASHINGTON, D. C.

WILLIS L. MOORE,

Chief of Bureau.

JAMES BERRY. Chief of Climate and Crop Division.

## ILLINOIS SECTION.

CHARLES E. LINNEY, Section Director, Chicago, Ill.

Vol. I.

CHICAGO, ILL.

No. 2.

The mean temperature of the soil at 6 a.m., observed by Mr. Chas. A. Love. at Aurora, was 64.7°; the air temperature at the same hour was 61.6°. The highest temperature of the soil was 74° on the 7th, lowest 54° on the 1st-2d.

Thunderstorms occurred within the state on every day and 30th. Hail fell at many stations on the 6th, 7th, 8th, at Sycamore, The average for the state was 3.88 inches, 17th, 19th, 21st, and 24th. Fog prevailed on the 4th, 8th, which is 0.72 of an inch below the normal fall, but 24th, and along the Ohio River on the 19th 27th, and 28th, greater than the month of June in '93. '94, or '95. Solar halos were observed on the 1st, 2nd, 4th, 17th, 18th and 23d. No auroras were seen.

the state during June. In the northern section 1.10 inches on this day. There was but slight fluctuation in the baromfell at Walnut in 1 h. 15 m. on the 7th, and 1.33 inches, eter during the month, the extreme range was only 0.71 of fell in 1 h. on the 20th. In the central section 3.20 inches an inch. fell at Carlinville in 1 h. 10 m. on the 7th, and 1.45 inches fell in 1 h. 10 m. at Charleston on the 20th. At LaHarpe 1.15 inches fell in an hour on the 24th; at Lexington 2.82 average hourly movement of 7.8 miles. The prevailing inches fell in 11 hours on the 7th and 8th; at Mt. Pulaski direction for the month was south, although many other 3.36 inches fell on the 8th; at Palestine 1.24 inches fell in a half hour on the 17th, and 1.70 inches fell in an hour on corded was 52 miles from the northwest at St. Louis on the the 24th; at Rantoul 2.72 inches fell during the night of 21st. Sunshine was slightly above normal; there were 9, the 7th; at Springfield 4.03 inches fell on the same night; at Tuscola 0.95 of an inch fell in 50 m. on the 25th, 0.79 while rain fell on an average of 10 days. of which fell in 20 m. In the southern section 3.42 inches fell at Albion on the 22nd and 23d; at Cobden 0.66 of an inch in 25 m. on the 6th, and 2.03 inches during the night early morning of the 1st.

mal. The marked heat periods of the month were the 5th for existence and made work a burden.

above

to 7th, 19th to 22st, 24th, 25th, and 30th. The 6th, 20th. and 21st were the warmest days of the month and the days on which the maximum temperatures generally occurred. Temperatures above 90° were common on these days and a maximum of 100° was recorded at Mascoutah, St. Clair Co., on the 20th; this was the highest temperature of the month. The heat of the month, however, was mild when compared with the great heat and dryness of June, '95. Cool periods were experienced on the 1st to 3d, 8th to 13th, and 28th; the lowest temperature of the month generally occurred on the morning of the 11th. A light frost was reported in the vicinity of Wheaton on that morning. The lowest temperature of the month, however, was 39° recorded at Ft. Sheridan on the 1st and at Dwight on the 14th; this gives an extreme range of 61° for the month.

As before suggested, the rainfall of the month was largely in the form of light thundershowers, at frequent intervals and over limited areas. The northern section received much the smallest portion of any part of the state, while the southeast counties, heretofore rather lacking in rainfall, received heavy and frequent showers. Rain periods are difficult to determine, owing to the character of the rain, but showers prevailed on the 1st to 3d, 7th to 9th, 12th, 19th, 20th, 25th, 27th, and 28th. The heaviest rainfall within the during the month of June except the 5th, 11th, 13th, 29th, state was 8.29 inches at Cisne, and the least 1.59 inches

The atmospheric pressure of the month averaged 29.98 19th. 20th, 24th, 26th, and 29th, and luual halos on the 21st inches; the highest pressure of the month was 30.35 inches at Galva on the 26th, on which day the highest reading occurred throughout the State; the lowest was 29.64 at Excessive rainfalls occurred at a number of stations in Chicago on the 8th. The lowest reading generally occurred

> The average wind movement, considering the eight Weather Bureau stations reporting, was 5,633 miles, an directions appear in the reports. The highest velocity re-14, and 7 days respectively clear, partly cloudy, and cloudy,

The month was generally very favorable for farm work and the rapid advancement of all crops. The season began early and the month of June favored the conof the 4th; at Friends Grove 2.56 inches fell on the 23d tinuation of very rapid growth and ripening. Compared and 24th, and at New Burnside 2.46 inches fell during the with June '95 the month just ended was one of frequent showers, nearly normal temperature and few extremes, while June, '95 was a month of few showers, a marked de-Climatically June was a month of nearly normal tem- ficiency in precipitation, great heat and a number of dangerperature, the departure being 0.4° bylow, and of frequent, our local storms. The one favored the growth of vegetation light thunder showers, averaging nearly an inch below nor- and farm work, the other caused all vegetation to struggle

#### THE PROGRESS OF THE CROP SEASON.

CHICAGO, JUNE 15, 1896.

The past week has been rather cool for good growth. The temperature averaged from four to five degrees daily below normal. Heavy rains the first of last week also left the ground in too wet condition for work until the middle of the week; since then, however, cultivation of corn, cutting of clover and the harvest of wheat and rye have been pushed rapidly. Most of the wheat is in the shock in the southern counties and much wheat and rye in the central. A few fields will not be cut owing to their poor condition. Clover has generally been saved in good condition. Corn is doing well except it is weedy; chinch bugs are reported going from the wheat to the corn. Broomcorn is doing well; pastures and meadows are generally in good condition, although timothy is poor in some localities. Gardens and potatoes an inch of rain fell in 20 minutes. are excellent; small fruits good, but tree fruits not as plentiful as previously anticipated.

CHICAGO, JUNE 22, 1896.

The past week has been warm with scattered thundershowers, an excellent week for farm work, which has been four or five miles sontheast late in the afternoon, damaged pushed rapidly. Wheat cutting is practically finished in all counties south of the center of the State, and much stacking has been done, few threshing from the shock. Rye cutting has also largely been done in the central counties and clover hav is generally housed. Favorable weather has prevailed for all work, corn cultivation being finished up rapidly and most early corn laid by, while late fields are being cleaned. Tassels are showing on early corn in south coun-jof vegetation. Destructive storms and winds have occurred ties. Some slight damage is reported from chinch bugs on every side of us without injury to this locality. which have gone from the wheat fields. Broomcorn is doing well; pastures and meadows are in good condition, having beginning; gardens and potatoes doing finely, and small fruits ripening in abundance.

CHICAGO, JUNE 29, 1896.

The past week was rather lacking in sunshine throughout the southern section and in small areas in the central, owing to frequent and heavy rains, elsewhere the weather conditions were very favorable for farm work and good growth of crops, temperature was nearly normal and light showers prevailed. Wheat and rye harvest is finished except in northern counties; most of the grain is in the shock, little being stacked or threshed as yet. Some damage to the grain in the shock is reported by wet weather in the southern section. Oats harvest has begun in southern counties and the grain is ripening fast in central and northern. It is generally of very rank growth and some lodging, smut and rust are reported. Corn has made good growth, although fields are needing more work in southern counties. Clover cutting is nearly finished and timothy beginning. Broomcorn, pastures, potatoes, gardens, and small fruits are generally in good condition; tree fruits show some injury by insects.

CHICAGO, JULY 6, 1896.

The past week was a very favorable one for farm work. Temperature averaged from 2° to 4° daily above normal, and scattered showers, quite heavy over the south half of the state, gave sufficient moisture. Work has been pushed rapidly; having and the cleaning of late corn over the entire state, oats harvesting, and wheat and rye stacking and threshing over the south half. Timothy is generally proving fair, in some counties good. Oats are heavy and promise a large yield, although slightly damaged by rust, smut and lodging. Wheat is spotted, some fields in central and west

counties are good, elsewhere the yield is from fair to poor. Rye is showing fair results. Corn has advanced rapidly under the warmth, all early fields throughout the south half of the state show tassel and silk, while later fields are being cleaned and laid by. Broomcorn, gardent, potatoes and pastures are generally in good condition, with large yield of early potatocs ready for market.

#### OBSERVERS NOTES.

Dixon.—Fierce wind and rain at 10.30 p. m. on the 27th. Eustace Shaw.

New Burnside.—Severe thunderstorm at 7.30 p. m. on the Geo. Harris.

Tuscola.—During the thunderstorm on the 25th, 0.79 of E. W. Lester.

Knoxville.—On the 1st. of July the wheat here is all cut, hay all made, oats turning ripe and standing up well, except on very rich ground.

Morrisonville.—On the 19th, a heavy rain and hail storm crops, considerable lightning. Harry Grundy.

Riley.—The mean temperature of June was 0.6° above the normal of 35 years past; the total precipitation was 1.14 inches below the normal for the same period.

John West James

Oregon.—A remarkably favorable month for every kind

A. P. Hatch.

FRIENDS GROVE.—Wheat threshing begun, turning out poor in quantity and quality. Oats excellent, some smut, and lodging, but not bad. Apples have dropped and blown off badly, potatoes and pastures are good. V. E. Majors.

Louisville.—A very heavy local rainfall a few miles to the S. and SW. of here on the evening of the 4th. In some places as much as three inches of rain were reported, which put the streams out of their banks. It extended but a short distance north and south and there was but little thunder with the storm. Belford A. Jenkins.

#### Barometer and Wind Table.

		Dal	rome	ter,				Wind		
Stations.						ve- t.	hour-	Maxi	mum city.	velo-
	Mean.	Highest.	Date,	Lowest.	Date.	Total move ment.	Average ly.	Miles:	Direc- tion,	Date,
Bloomington ( airo ( hicago Davenport Dubuque Galva e Hannibal Keokuk Kishwaukee Minonk Olney Oswego. Reynolds St, Louis. Springfield Robinson Rushville Averages	29.96 36.00 29.96 29.97 29.98 29.98 29.95 30.03 29.95 30.60 29.97	30.21 30.23 30.26 30.31 30.31 30.35 30.32 30.33 30.72 30.30 80.30 80.30	26 26 26 25 26 26 26 26 26 26 26 26 26 26 26 26	29.65 29.71 29.64 29.68 29.80 29.71 29.72 29.69 29.71 29.66 29.74 29.73 29.73	8888888998888	5.012 16,228 5.655 3.271 5,248 4.533 5,886 5.233	7.0 14.2 7.9 4.5 7.3 6.3  8.2 7.3	40 50 31 32 44 30	s. sw. w. sw. ne. nw.	6 7 7 6 17 12

#### Climatological data for June, 1896.

						Clin	ato	logi	cal	data	for .	June, 1	896.							
			rd,	Temp	erature	in de	egree	s Fal	renl	neit.	Pre	ecipitati	on, in	inches			Sky.		ection	
Stations.	Counties.	Elevation feet.	Length of reco years.	Mean.	Departure from the normal.	Highest.	Date.	Lowest.		Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number rainy days.	Number clear days.	Number partly cloudy days.	Number cloudy days.	Prevailing direct of wind.	Observers.
NORTHERN SECTION Ashton Aurora Cambridge Chemning Chicago Clear Creek Davenport, Ia, Dixon Dubuque, Ia Dwight Ft. Sheridan Galva Hospital Joflet Kishwankee Knoxville Lanark Martinton Minonk Mounnouth Oregon Oswego Ottawa Reynolds Riley Rockford Round Grove St. Charles Scales Mound Streator Sycamore Tiskilwa Walnut Wheaton Winebago Zion Averages	Kanc. 1. Henry MeHenry 1. Cook Puthann Scott. Lee 1. Dubuque. Livingston 1. Lake. Henry Kankakee Will 1. Winnebago Knox * 5. Carroll * 1 Iroquois Woodford * 1 Warren Ogle. Kendall * 1 Lasalie 1. Rock Island McHenry Winnebago 1. Whiteside. Kane * 1 Jo Daviess Lasalle De Kalb * 1 Bureau * 3 I-ureau Duage. * 3. Winnebago ! 3.	676 824 500 613 800 651 843 629 730 745 7650 800 809 875 713 618 800 500 717 682	26 25 23 8 8	68.2 70.2 70.7 69.8 70.2 70.7 69.8 71.0 66.8 72.0 66.5 69.9 71.6 69.9 68.6 69.9 7.5 69.0 68.8 71.8 69.0 66.5 69.0 66.6 69.9 70.2 69.0 66.6 69.9 68.8 71.8 68.4 7.0 68.6 69.0 68.8 71.8 68.4 68.0 68.8 71.8 68.4 69.0 68.8 71.8 68.4 69.0 68.6 69.9 68.8 71.8 68.4 69.0 68.8 71.8 68.4 69.0 68.8 71.8 68.4 69.0 68.6 69.9 69.0 68.8 71.8 68.4 69.0 68.6 69.0 68.6 69.0 68.6 69.0 68.6 69.0 68.6 69.0 68.6 69.0 68.6 69.0 68.6 69.0 69.0 69.0 69.0 69.0 69.0 69.0 69	-1.4 +0.6	92 90 93 89 96 90 91 96 97 96 98 98 98 99 99 99 99 99 99 99 99 99 99	6	52 42 46 40 40 50 42 50 46 49 39 39 39 44 47 43 44 46 44 44 44 43 48 50 46 47 48 48 48 49 49 49 49 49 49 49 49 49 49 49 49 49	11 12 1 1	43 27 41 26 41 25 35 37 33 33 33 33 33 33 33 33 35 41 33 33 33 33 33 33 33 33 33 33 33 33 33	2.62 2.67 3.18 2.82 2.81 2.28 3.11 3.13 3.13 3.13 3.13 3.10 3.16 3.20 4.42 4.42 2.26 4.37 3.56 4.37 3.56 4.32 2.22 2.26 3.30 3.40	-1.22 -1.02 -2.02 -2.09 -0.05 -1.84 -1.26 -1.07 -1.14 -1.91 -3.19 -0.67 -1.13	o.76 i.81 i.23 o.92 o.60 i.27 i.04 i.94 o.92 i.07 i.07 i.08 i.17 i.17 i.17 i.17 i.17 i.19 i.22 i.15 i.19 i.22 i.15 i.19 i.22 i.15 i.22 i.15 i.22 i.15 i.24 i.05 i.21 i.05 i.11 i.11 i.12 i.12 i.15 i.14 i.05 i.12 i.15 i.14 i.15 i.15 i.14 i.15 i.15 i.15 i.15 i.15 i.15 i.15 i.15		11 10 9 9 10 11 9 8 10	111 100 6 9 14 4 5 13 7 9 6 13 16 8 8 3 3 11 11 15 2 2 10 14 12 19 19 19 19 19 19 19 19 19 19 19 19 19	16 14 19 14 17 11 18 8 20 15 17 7 7 18 13 16 8 24 18 14 13 19 11 16 17 10 15 15 10 15 15 10 15 15 16 5 5 14	6 5 7 2 2 9 14 9 3 3 6 6 6 7 7 8 8 7 7 4 4 4 2 2 2 2 2 2 2 2 2	ne. ne. e. sw. ne. se. se. se. sw. nw.	Dr. M. M. Robbins. S. B. Randall.
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Note,—Unless otherwise indicated the highest, lowest and mean temperature are from maximum and minimum thermometers. \*Highest and lowest temperature from observed readings. 1. Mean temperature from  $7+2+9+9 \div 4$ : 2. 8a+8p+2: 3. 7a+7p+2: 4. 6a+6p+2: 5. 7a+2p+2. a, b. c, d, etc, number days missing. © U.S. Weather Bureau Stations.

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adueah, Ky um Bill John Louis, Mo Averages	26	+	. 21	.05		, 16		.64	.03	.02		+			• 33	****	.01	.20			.60	.12	.40	.31	+	.61	. 50				
Averages	39	.0	7 .23	.18	.00	.12	• 04	.36	.06	.02	.00	10.	,00	.00	. 20	.19	.09	.01	•00	.01	.37	.69	•41	.16	.32	•41	.59	+	• 00	.00	.00
State averages	10	. 15	K 17	1.05	OI	OF	56	46	-06	+01	10.	. 20	.01	.00	10	. 11	1.7	OI	.10	. 17	.15	21	26							- 00	- 00

<sup>†</sup> Trace, when precipitation is less than o.or of an inch.

a. b, e, d, etc, number days missing,

### U. S. DEPARTMENT OF AGRICULTURE,

REPORT FOR JULY 1896

## ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

# WEATHER BUREAU.

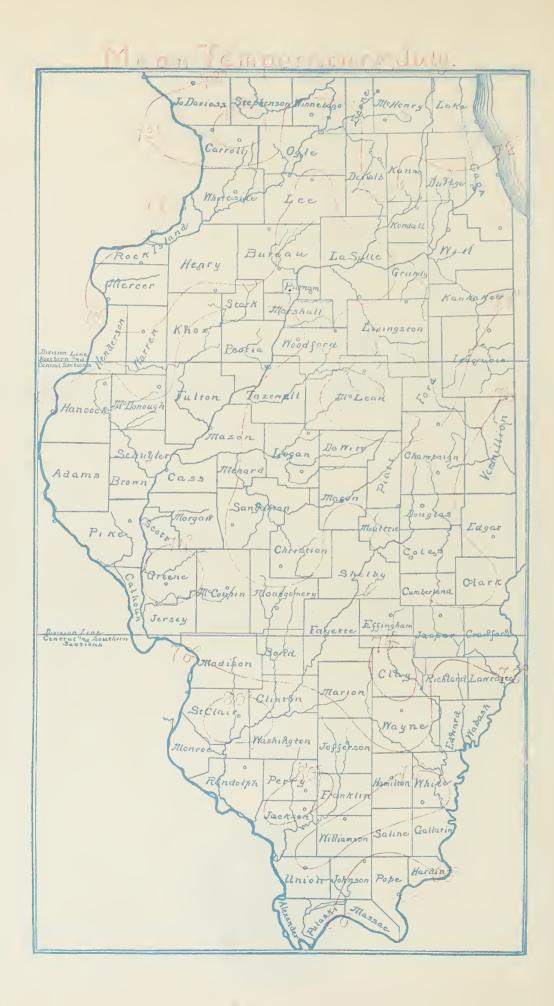
WILLIS L. MOORE,

BY

CHARLES E. LINNEY,
OBSERVER AND SECTION DIRECTOR, CHICAGO, ILL.



Natural History Survey Library



U. S. DEPARTMENT OF AGRICULTURE,

## WEATHER BUREAU.

CENTRAL OFFICE: WASHINGTON, D. C.

WILLIS L. MOORE.

Chief of Bureau.

JAMES BERRY. Chief of Climate and Crop Division.

## ILLINOIS SECTION.

CHARLES E. LINNEY, Section Pircetor, Chicago, Ill.

VOL. I.

CHICAGO, ILL.

No. 3.

Through an error in proof reading a mistake was made in the discussion of the temperature for June. The departure the 14th and 15th. This was followed by a general and should have been given as four-tenths of a degree above the heavy rain period on the 18th-19th and a continuation of normal, instead of below.

Mr. Chas. A. Love, Aurora, was 69.1°: the air temperature at the same hour was 64.4°. The highest temperature of the soil was 80° on the 15th, the lowest 62° on several dates. Mr. Love says that during the great heat of the 14th the soil temperature touched 90°; the ground was very dry and the sun affected the soil nearly as easily as the air.

Many reports of excessive rainfalls are given by the voluntary observers. Some of the most notable are as follows: Clear Creek, 3.80 inches on the 21st; Galva, 4.01 inches on the 23-24th; Scales Mound, 5,28 inches from 6 a.m. to 12 midnight of the 26th; Alexander, 3.05 inches from midnight to 5 a.m. on the 24th; Atlanta, 5.23 inches on the 19th; Beardstown, 5.15 inches on the 20-21st; Hannibal, 5.46 inches on the 18-19th; Carlyle, 4.33 inches on the 20th; Cisne, 3.77 inches on the 20th; Jordans Grove, 3.61 inches on the 20th; Louisville, 4.22 inches on the 19-20th; Mt. Vernon, 6.07 inches on the 19-20th; of which 2.48 inches fell in 20 minntes from 4 to 4.20 p.m. of the 20th; Olney, 5.79 inches on the 19-20th; Plum Hill, 3.63 inches on the 19-20th; St. John, 3.96 inches on the 20th.

Climatically, July was a month of nearly normal tem- west at Keokuk on the 31st. perature and of more than twice the normal rainfall. The partures ranged from 1.7° below to 2.2° above.

latter carrying the maximum temperatures above 100° in month, would have done.

some of the central and southern counties of the state. The second heat period of the month was followed by quite a marked cool period, when temperatures dropped to 50° or below in nearly every county, and light frosts were common on low lands throughout northeast counties. The first cool period of the month was from the 7th to 8th, the second from the 16th to 18th and the last the 24th-25th.

The highest temperature was 106° at Mascoutah, St.Clair Co. on the 30th, closely followed by 105° at Paris and 104° at Atwood and New Burnside. The lowest temperature was 39° at Cheming, on the morning of the 17th. This was closely followed by records of 40° at a number of stations in the northern section and one in the central section. The extreme range in temperature for the month was 67° while the average greatest daily range was 34°.

Rainfall was largely confined to the last half of the month and came in excessive showers. A light rain period began on the 2d and showers continued until the 5th, when dryness ensued until the 13th. Showers set in throughout the southern section on the latter date spreading over the state during showers, with slight interruption, to the 24th. They then ceased in southern counties but continued throughout the The mean temperature of the soil at 6 a.m., as observed by north half of the state to the 27th; and scattered showers fell until the end of the month. The last day proved a shower period for most of the state.

> The enormous quantities of water which fell during the thunder showers of the 19-20th and 23-24th flooded much of the low land and did great damage to small grain in the shoek. These heavy showers brought up the rainfall for the month so high that it more than doubled the normal fall, and the average exceeds that of 1895 nearly an inch, although the latter was a wet month.

> The greatest fall of rain reported for the month was 12.14 inches at Atwood, Piatt, Co.; the least 2.20 at Herrin, Williamson, Co. The extreme south of the state was much lacking in rain, while east central counties received the extremely heavy falls.

> The number of rainy days during the month was 9, white there were 13, 12, and 6, respectively, clear, partly cloudy and cloudy days. The atmospheric pressure averaged 30.02 inches; the highest was 30.23 at Galva on the 7th, and the lowest 29.66 at Davenport and Reynolds on the 26th. The total wind movement, as determined by eight Weather Bureau stations, was 5,917 miles, an average hourly movement of 8.0 miles. The prevailing direction for the month was SW, and the highest velocity 48 miles from the south-

Compared with previous years the month was the wettest temperature departure for the state was but seven-tenths of which we have experienced since systematic records have a degree below the normal, although individual station de-been kept within the state. The rain, however, coming in exceedingly heavy showers within a short period of time, Heat periods were experienced from the 1st to 6th, 10th probably did not do as much good to crops as a much smallto 15th, 20th to the 23d and from the 26th to the 31st, the er amount of rain, more evenly distributed throughout the

#### THE PROGRESS OF THE CROP SEASON.

Chicago, July 13, 1896.

ditions were very favorable for work which was pushed. of the state. Oats are proving fine in southern counties and fair to good elsewhere; rust has caused greater damage well. Broomcorn cutting has begun; plowing for fall reeding in the northern counties that was anticipated. Timothy is is well under way. rather uneven in yield, but is generally of good quality and has been saved in fine condition. Wheat and rye stacking and threshing continues; wheat showing better results in west counties than elsewhere. Corn is growing finely, early fields are in tassel and silk over the entire state, and of the 17th. late fields are being cleaned up and laid by rapidly. Pastures and gardens, with corn, show the need of rain; early potatoes are ripe and the vines dying. Broomcorn is in splen- late corn on low ground. did condition.

Chicago, July 20, 1896.

During the past week the temperature averaged from 3° to 5° daily below the normal and a light frost occurred in a corn. Drops of ice were seen on bound grain. few northeast counties on the 17th. Rain came in light showers in central and southern counties the first of the week and in good general rains on Saturday and Sunday. Much good was done in the northern section, and the results are beneficial over the state as a whole, although some low land will be flooded in central and southern counties and some damage caused to wheat and oats in the shock. Threshing and the ending of oats and timothy harvest, have been pushed rapidly. Hay has been saved in fine condition and shows a fair yield. Oats are proving disappointing in central and north counties, being damaged by rust and bugs. Wheat and rye threshing continues. Pastures, gardens and late potatoes will be much benefited by the timely rains.

Chicago, July 27, 1896.

The past week has been one of nearly normal temperature and of frequent and heavy rainfall over the state. Nearly every county of the state has received many times the normal fall of rain; in some cases it has exceeded six inches. This excess of water has resulted in very wet low lands, much flooding being reported, and in considerable damage to wheat, rye and oats in the shock. Wheat and oats especially have begun to sprout, to mould, or to rot in many fields; and timothy, where unhoused, has been damaged. Threshing was stopped by the wet and is just being resumed, plowing also. Corn has been benefited generally and except on low lands is doing finely, although somewhat blown down by the wind with the storm on the 23d and 24th. Second-crop clover is doing well, but slightly beaten down by the rain in southern counties. Pastures and meadows, late potatoes, gardens, broomeorn and fields peas were generally benefited by the rains. Apples, pears, and peaches still promise a fair to a large crop; early apples are very plentiful.

Chicago, August 3, 1896.

The past week was one of great heat, the average temperature exceeded the normal from 2° to 8° daily, while the maximums exceeded 90° throughout the week in some of the counties of the state. Showers were very light and scattered in southern counties but more frequent and in many cases heavy in central and northern counties. It was a favorable week for farm work, and threshing was generally

resumed. Oats and wheat show much injury by the too wet. weather of the previous week and the excessive heat following. Considerable grain in central and southern counties is re-The past week was a clear and dry one, with cool weather ported to be in an unmarketable condition. Corn has the first half and rapidly increasing heat last half. The con- pushed rapidly forward, except on low and undrained land where it is inclined to yellow and be weedy. Pastures are Oats harvest and having are practically finished over most good; second-crop clover has made good growth and cutting has begun in southern counties. Late potatoes are doing

#### OBSERVERS NOTES

Wheaton-Light frost in some low places on the morning Wm. H. Johnson.

Sycamore—Frost on the morning of the 17th killed some Roswell Dow.

Carlinville-An inch and sixty-seven hundredth of rain fell in sixteen minutes on the 31st. R. O. Purviance.

Oregon-On the night of the 16th frost injured some

A. P. Hatch.

Mr. Vernon-During the 24 hours from 4.20 p. m. of the 19th to 4.20 p. m. of 20th the rainfall was 6.07 inches. During the twenty minutes from 4 to 4.20 p. m. of the 20th Theo. P. Steele. the rainfall was 2.48 inches.

CISNE—The oat crop here is much better than last year, called a good crop; wheat, we had none worth mentioning. The meadows of timothy are satisfactory to the farmers; red top is a later grass and while making good hay, is raised mostly for the seed; it is fair this year, though rather light on the ground. The apple crop may not be so large as last year but it is of better quality. The corn on some low land will be short but this will be more than made up by the upland and prairie. On the 19th at 5 p.m. we had a severe thunderstorm, and ninety-three hundredths of an inch of rain fell in twenty minutes; lightning killed one person and some stock near town. W. H. Mix.

#### Barometer and Wind Table

		Ba	rome	ometer, Wind.										
Stations.						ove- it.	hour-	Maxi	velo-					
	Mean.	Highest	Date,	Lowest.	Date,	Total mov	Average bour-	Miles.	Direc- tion,	Date,				
Bloomington	30,02	30-21	11	29.83	26									
('airo	30.04	30.19	11	29-85	15	4.831	6-5	33	SW.	13				
Chicago	30,00	30-19	7	29.76	1.4	11,679	15-4	36	ne.	15				
Dayenport	29.99	30.21	7	29.66	26	5-393	7-5	35	nw.	21				
Dubuque	29.99	30-21	7	29.68	26	3.089	4-3	21	ne.	24				
Galva	30.04	30.23	7	29.76	26									
Hannibal	30=00	30.19	11	29.76	23	5.759	7-7	26	ne.	31				
Keokuk Kishwaukee	36 00	30.19	. 7	29.75	26	4.635	6.2	48	DW.	31				
Minonk	30.02	30.18	I	29.79	26									
Olney	30.02	30.18	II	29.51	26 20									
Oswego	30-02	30.16	II	29-24	25									
Reynolds	29.99	30.21	7 7	29.66	26									
Robinson	30.01	30-18	11	29.57	24									
St. Louis	30-05	30-22	11	29.35	24	6.532	9.2	41	SW.	31				
Springfield	30.02	30.21	11	29.82	26	5,719	7.7	36	W	21				
Rushville														
Averages	30.02	30.20		29.76		5.91 7	8.0							

Climato	logical	data for	July,	1896.
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			-:	Town								ouiy, i ecipitati					C1-+-		q.	
			ord	Temp	erature E	a, in eic	gree	srai			1.1.6	erpitatti E	on, m				Sky.	Δ.	ection	
Stations.	Counties.	Elevation feet	years.		Departure from the normal.	÷		t.		est daily		Departure fro normal.	est in 24 urs.	otal snowfall unmelted.	er rainy	er clear	er part y days.	er cloudy	Prevailing dir.	Observers,
		levat	Length o	Mean.	epar the	Highest	Date.	owest	Date.	Greatest crange.	Total.	epar not	Greatest h	Total	Number ra	Number days.	Number	Number	revai	
		區	Ä	*	D	H	۹.	Ä	D	9	F	e e	5	Ē	Z	Z.	N°	Z	E -	
NORTHERN SECTION Ashton	Lee * 1		1	71.6		95	13	57	16		4.71		1.28		9	13	15	3	۶w.	Ira R. George.
Aurora	Kane	676	17	75.0		100 95		46 50	17	40 31	5.60	+1.72 +2.37			9	6	21	4	s. sw.	Dr. M. M. Robbins. S. B. Randall.
Cheming Chicago				71.2	0.0	93	13 14	39 54	17	41 25	5.10 3.61	+0.13	1.99		11	8	10 14	13	s. ne	Jos. Kuhles. Central Office. @
Clear Creek Davenport, Ia	Putnam	500			0.0	99 94	14 14	42 53	16 7	38 28	9.65	+1.95			9	10	15	6	s. sw.	II. K. Smirli. F. J. Walz @
Dixon Dubuque, Ia	Lee 1	800			-1.0	95 97	14	44 50	17	39 38	4.81 7.72	+3.44	1.17 3.10		11 12	15	9 22	7 4	s. ne.	Enstace Shaw. Paul Daniels, @
Dwight Ft. Sheridan	Livingston 1 Lake		. 8	71.4		95	29 14	40 47	1.4	42 30	3.86		2.47 1.04		8 9		9		W.	Prof. G. W. Horton. Post Surgeon, U. S. A.
Galva Hospital	Kankakee			71.4		95 88	15	46 50	17	38 27	7.31		2.69	*******	8	14 14	9	8	sw.	Prof. F. U. White. E. Ill. Hospital.
Joilet	Winnebago	730		72.2			13	45 41	17	40 42	4.97 3.84		1.63		8	13	11	7 6	sw.	F. M. Muhlig. George Stevens.
Knoxville Lanark	Carroll * 1	883		69.6		95	13	48	17		5.06	+3 57	2.87		7 9	5	12	14 2 6	s. sw.	C. N. Butt. M. N. Wertz.
Martinton	Woodford * 1	745		73.8		96 94 94	27 14 30	45 51	17 16 17	38	7.02 5.33 5.79	• • • • • • • • • • • • • • • • • • • •	2.54		11 10 12	17 5	8 22 20	4 4	S. W. SW.	Geo. Bunker. O. M. Davison.
Monmouth	Ogle	702		73.8 73.0 72.4		95	14	43 43 51	17	44	4.48	+1.91	1.38		7 8	7 13 14	16	6	ne.	D. J. Strang, Rev. A. P. Hatch, J. S. Seely
Oswego Ottawa Reynolds	LaSalle 1	500		74.8	-0.5	100		42 46	17	47 36	8.63	+4.07 +2.59			12	11	13	7 2	sw.	Dr. J. O. Harris. Thos. C. Lewis.
Riley	Mellenry	956	35	71.4	0.0	95	14 14	46 48	17	34 39	3·29 4·36	-0.20 +0.44	1.48		9 7	7	16	8	w.	John West James, Hosmer C. Porter.
Round Grove St. Charles	Whiteside			73.8	+1.0	98 96	14	43	17	45	6.55				8	16	7	8 4	w.	R. A. Hawley. S. L. Adams.
Scales Mound Streator	Jo Daviess			72.0		98	14	43 53	8 8	40 29	7·93 4·95		5.28		8 7	3 21	24	4 2	sw.	Joseph Vipond. R. Williams.
Sycamore Tiskilwa	De Kalb * 1	800	15	71.4	+0.3	94 90	I4 I4	40 50	16	31	3.60 5.57	-1.08 +1.31	1.83		0	13 16	13	5 5	sw.	Roswell Dow. W. I. Greeley
Walnut Wheaton	Lurean LuPage. *3	7:7		75.0			14	45 52	17		6.32 5.14		1.89		, 10 , 6	13 5	14 21	4 5	s. sw.	O. C. Nussle. Wm. II. Johnson.
Winnebago Zion				72.4		96	14 13	4 I 4 I	17	41 39	4·95 4·15	+1.17	2.09 1.70		8	16 18	11 8	4 5	sw.	Frank Osborn. Robert McGrath.
Averages		• • • • • •		73.3		96		47		36	5.81		2.09		9	13	12	6	. sw	
Alexander				76.9		97	27	46	8	38	7.50				ΙΙ	6	23	2	sw.	George H. Hall.
Atwood Bloomington	McLean	853	II	73.8		94	30	50 47	17	32	6.68		2.10		10	13	12	7	s. sw.	J. W. C. Gray. Prof. M. J. Elrod.
Bushnell Carlinville	McCoupin	D		75.4		97	29	47 51	17 8 8	41 31 27	6.53		1.67		13	18	7	6	sw.	Dan E. Zook, R. O. Purviance, Prof. Clyde Sione.
Carrollton	Vermillion k	644		77 - 1		93 90 95	28 28 29	5 <sup>2</sup> 50	18 17	30 28	6.42	+6.64	1.15 2.60 3.41		13 8 11	18 16	0	10	se. s. w.	Sy. Sandusky. Jacob B. Dazey.
Decatur East Pe ria	Macon	685		75.5		95	29	53 50 40	7	31 45	7.02		2.85		10	14	12	5	sw.	Prof. J. II. Coonradt. C. L. Farrington.
Griggsville Hannibal, Mo	Pike			76.9		95 96	14	51 54	17	33 27	8.04 9.44		3.68		10	14	9 12 11	5 4	sw.	Emily R. Gray. E. II. Nimmo, @
Havana	Mason	475		77.0		95 97	29	56 53	17 18	27 29	4.87		2.55		14	17	10	4 5	sw.	Genl. J. M. Ruggles. P. J. Edwards.
Keokuk, Ia LaHarpe	Clark	613	24	76.0		95 96	30 14	55 52	17	27 32	8.0I 7.80	+3.01	2.37		14	16 7	7 23	8	sw.	Fred Z. Gosewisch. @ Frank Cambell.
Lexington Martinsville	Clark	610		74.0		94 96	29	41 54	17	40 29	7.18		2.96		8	19	8 8	3 15	sw.	Wm. Stiekler. J. B. Sheapley.
Mattoon	( hristian		10	77 - 4	+1.5	90	29 30	65 48	17	30	10.07 5.98	+6.90	3.26 1.41		12 10	12 17	8 3	11	sw.	Jos. Withington. Harry Grundy.
Mt. Pulaski Palestine	Crawford 1	500		71.2 76.8	+2.2	94 96	29	50 52	9	30	8.14 7.76	+4.82	2.96		10	8	17	3 4	se. w.	Z. K. Wood. John E. Templeton.
Peoria	Peoria 1	550		77.6	-0.9	99	14	49 53	17	34 36	8.39 7.02	+3.05	2.12		10	9	16	7 6 6	sw.	L. B. Myers. Dr. Fred Brendel.
Philo	Champaign 1			73.9	-1.7	95 95	28	49 50	17	39 34	7.27 6.86	+4.52	3.40		9	16	14	8	sw. sw.	H. A. Burr, H. B. Clark. A. P. Woodworth.
Rose Hill Springf eld	Jasper *1	669		76.5		98	28 29 29	59 64	16 8 17	27	7.82	± 72	3.30		6	5	19	. 5	SW.	Isaac Kibler. John Craig. @
Tuscola	Pouglas	l		75.I	+2.0		28	53 48 52	17	32 33	8.51 6.85 7.71	+5.73	2.32		10	8	11 15 12	8 7	sw.	Irwin Lester.
SOUTHERN SECTION.				75.0		71		32			/./.		2.01				12			
Albion		359	25	78.1 70.6	+0.6	98 98	30 30	57 61	8 8	29 21	4.89	-1.14	3.51		7	19	6	6	sw.	B. F. Michels. P. Il. Smyth. @
Cisne	Wayne * 1	767	1	76.1	— I . S	100	30	58 54	8 9	31	6.00	-0.79	3.77		10	18	12.	4 5	s. s.	W. H. Mix. John Buck.
DnQuoin Friends Grove	Perry * 1 Wabash * 4	5h1		80.4 73.4		100	29	62 56	17 8		5.23		2.75		5	12	18	I	s. s.	John Forester. V. E. Majors.
Herrin	Williamson * 1	504	18	76.9	-1.5	98	30	53	17	32	2.26	-2.19	0.73		5	12 22	9	10	sw.	Prof. M. S. Oudyn. D. R. Harrison.
Jordans Grove	White *		9	77.6 78.0	······································	97	30	50 56	5	34	5.54		3.61		10	14	12	5 9	sw.	W. F. Hoskins. W. J. S. Catheart. Relford A. Jonkins
Louisville	(lay Hamilton		14	78.4	+0.6	94	29	55 57	17	28 29 27	4.38		2.89		9 7 6	0	27	5 4	s. w.	Belford A. Jenkins. John Judd. Dr. G. Leibrock.
Mascontali	St lair 5 Jefferson			78.6		99	30	56 56	17	30 3.1	0 -		6.07	1		4 21	6	13	s. w.	Theo, P. Steele, George Harris.
New Burnside ! Olney	Richland * 1		9	79.0		98	30 29	54 56	8 8	34	.,,	±1.26	5-79			13	9	9	sw.	Victor E. Philips. J. C. Chesney.
Pium Hiil	Perry * 1			79-5		98	29	56 64	17	24	0.0	+1.26	3.63		7	17	9 14 8	3 4 7	8W. 8.	Godfrey Knetzger. Dr. H. C. Frankenfield.@
St. Louis, Mo Averages				77.8	0.0	QQ		58 58		30	4.67 5.08	+1.11	3.02		13	13	11	7 6	s. sw.	Z
Averages for the			2!	15.2	- 0.7	97		51		0+	0.35	+3-34	2.50		7		12	1		

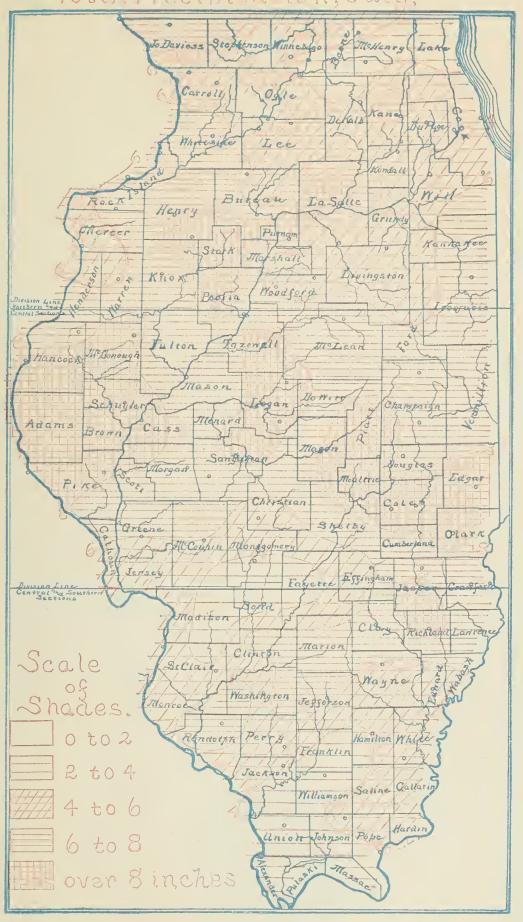
Note.—Unless otherwise indicated the highest, lowest and mean temperature are from maximum and minimum thermometers. \*Highest and lowest temperature from observed readings. 1. Each temperature from 7+2+9+9+4; 2. 8a+8p+2; 3. 7a+7p+2; 4. 6a+6p+2; 5. 7a+2p+2. a, b, c, d, etc, number days missing © U, S. Weather Burean Stations.

1896.
July,
for
temperatures
minimum
and
<b>Taximum</b>

	Maximum and minimum temperatures for July, 1896.
	2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 25. 29. 30. 31.
Yanous Aax	
Nurvea	62 94 64 92 66 04 68 86 60 84 52 88 48 90 56 96 58 08 58 98 60 8 70 8 77 58 77 58 89 96 60 70 58 77 58 89 97 58 89 97 58 89 98 97 58 97 58 97 58 97 58 97 58 97 58 97 58 97 58 97 58 97 58 97 57 57 57 57 57 57 57 57 57 57 57 57 57
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CENTRAL SECTION.	7. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2.
IIN SECTION.	[62 89 70 99 70 92 72 92 69 68 64 88 64 32 57 64 60 95 62 90 64 92 70 92 70 94 72 94 72 94 17 95 71 94 17 94

\* indicates 100, \*1 Indicates 101, etc.

Total Precipita ion, July,



## Daily precipitation for July, 1896.

	Day of Month.  1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 39,																31.															
Stations.	1.	2.	3,	4.	5.	6,	7.	8,	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	g). s	21.	22. 5	Z3.	24.	25.	26.	27.	28.	29.	30.	31.	Tota
NORTHERN SECTION.																					-1	1										
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nonk		10.	. 1	3														.43	2.55	. 27 .		1	.09	.44	. 07	+ ,	.19				-15	5
nmouth egon	25		8			1							.02					.70	.10 .		.75 .	•49	. 57	. 30	.03	-74	.25		.II.		- 57	5
wego				23	3								-98					. 32	.77 -			1	.61			- 95	.46					5
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Averages	.01	.01	. 1	7 .0	•01	• 00	•00	.00	,00	.00	,00	• 00	.05	.03	,06	+	+	.70	.76	.09	. 26	.14	.81	•59	.07	.85	.70	.03	•01	.01	.25	5
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ney un Hill			4	0		.10							1		1.10	•35			.25	3.38	.92	.55	.36								+	5
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A	1	. 0.		. 5.	1	.01	.01	.00	.00	.00				3	1	1 .09	.00		- 50	C++	740	-0	. 04	.00	-	. 00	.00	.00		- 140	+ 50 4	1 2

<sup>†</sup> Trace, when precipitation is less than o.or of an luch.

a. b, c, d, etc, number days missing,

REPORT FOR AUGUST, 1806

## ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

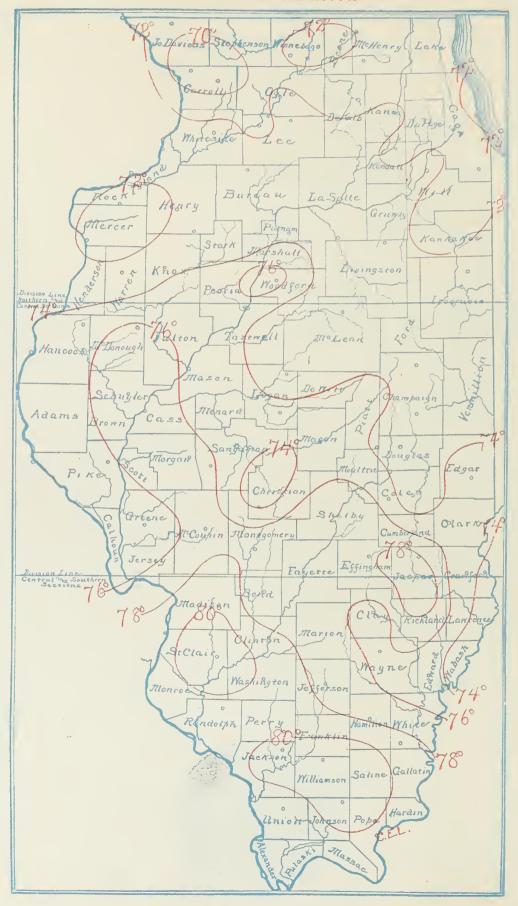
# WEATHER BUREAU.

WILLIS L. MOORE, energy of bureau.

BY

CHARLES E. LINNEY,
OBSERVER AND SECTION DIRECTOR, CHICAGO, ILL.





U. S. DEPARTMENT OF AGRICULTURE,

## CLIMATE AND CROP SERVICE

## WEATHER BUREAU.

CENTRAL OFFICE: WASHINGTON, D. C.

WILLIS L. MOORE,

Chief of Bureau.

JAMES BERRY, Chief of Climate and Crop Division.

## ILLINOIS SECTION.

CHARLES E. LINNEY, Section Pirector, Chicago, Ill.

VOL. I.

CHICAGO, ILL.

The figures which appear in our column for elevation are est daily range was 33°. gradually being verified and we hope by the next issue to give correct elevation data for each station.

Thunderstorms occurred during the month of August on the 1st, 3d, 5th to 16th, 18th, 21st to 23d and 26th, those on the 15-16th and 22-23d being very severe and wide spread. Hail accompanied the thunderstorms in parts of the state on the 5th, 13th, 15th and 22d.

temperature and rainfall, the temperature departure for the three months being plus 0.9°, and the rainfall departure plus 2.41 inches. Crops made good progress and fall finds practically all farm products safe from injury. The season as a whole was very forward.

Excessive rains were less common during the month of August than during the previous months of the summer, but there were several reported. The following are some of them: Dixon, 1.24 inches in one hour on the 13th; Dwight, 0.92 of an inch in 25 minutes on the 22d; Knoxville, 3.00 inches on the 15th; Lanark, 1.44 inches in 45 minutes on the 5th; Oswego, 3.20 inches on the 21-22d; in the central section, Bushnell, 2.72 inches on the 15-16th; Carlinville, 2.72 inches in 4 hours and 15 minutes on the 12th, of which 2.27 inches fell in 40 minutes; La Harpe, 5.25 inches on the 1st in three hours; Peoria, 1.47 inches in one hour on the 15th; Philo, 2.84 inches on the 12th; Rose Hill, 1.54 inches on the 21st in 1 hour and 30 minutes; Tuscola, 3.23 inches on the 12th; in the southern section, Carlyle, 2.67 inches in one honr on the 12th.

Climatically, Angust was a month of nearly normal temperature and slightly less than normal rainfall. The tem-

perature departure for the state as a whole was plus 1.2°, while the rainfall departure was minus 0.21 of an inch. The first half of the month was quite steadily warm and the last half, with slight interruption, cool. The great warm wave which extended from the 4th to the 11th carried the temperature to 100° in each section of the state, and a maximum temperature of 108° was recorded during this period at Mascoutali, St. Clair Co. A number of stations in the sonthern section had maximum temperatures for the month which averaged above 90°.

The last half of the month was mostly cool, the 26th to 28th being the coolest days, during which period minimum temperatures below 50° were recorded in each section of the state. Light frosts were observed on the mornings of the 27th and 28th in a few northern counties, but little or no damage resulted. The lowest temperature recorded was 37° No. 4. at Walnut on the morning of the 26th. The range of temperature for the state was thus 71°, while the average great-

The rainfall of the month came in thundershowers and neighboring stations measured amounts which vary greatly. The southern section did not receive half the normal fall, many counties were practically without rain. character of the rain storms makes it difficulty to designate rain periods, but showers were general over the central and northern sections on the 1st; scattered showers again fell over the north half of the state on the 6-7th, with a rain period for the entire state following on the 11-12th, a second on the 15-16th and a third from the 21st to the 23d. The summer just ended has been above the normal in In the interval from the 5th to the 16th thunder-showers prevailed throughout the northern section and many good showers fell over limited areas, not, however, extending into central or southern counties. Rain ceased with the general storm of the 21st to 23d; it was this period which gave most of the rain of the month to the southern section. The greatest fall measured was 7.96 inches at LaHarpe, and the least 0.44 at Plum Hill; Olney had but 0.47 of an inch. Herrin but 0.50, and, in the porthern section, Sycamore but 0.58 of an inch. The greatest fall in any 24 hours was 5.25 inches at LaHarpe.

> There were on an average, six rainy days during the month; there were also 16, 12, and 3 days, respectively clear, partly cloudy and cloudy, The sunshine of the month was thus much above normal. The prevailing direction of the wind was southwest, with an average hourly velocity of 7.9 miles and a maximum velocity of 45 miles from the west at St. Louis on the 16th.

> The pressure of the air averaged 30.03 inches, which is high for the month of August. The highest pressure recorded was 30.42 at Chicago and St. Louis on the 28th, the lowest 29.68 at Davenport and Dubuque on the 22d, The month was but seven-tenths of a degree cooler than August. 1895; it was also nearly equal in average rainfall, the southern section each year being much lacking.

#### THE PROGRESS OF THE CROP SEASON.

Chicago, August 10, 1896.

The great heat of the previous week has contined and the dryness has increased. The temperature averaged from 8° to 10° daily above the normal, and the maximum touched 90° to 100°. Good showers fell over the northern section on Thursday afternoon and night, but only very light and scattered showers fell in central and southern counties. The growing dryness is most felt through the southern section and there corn is being prematurely forced to maturity. In the central section corn is needing rain on the uplands but is still doing well, while throughout the northern section the outlook is excellent; early corn is maturing finely and late filling nicely; much of the early corn over the state is assured. The great he tof the week largely prevented threshing and plowing, although most of the shock threshing has been done. Late potatoes, pastures, young rain is badly needed. Taking the season as a whole, howand second-crop clover and gardens are generally doing well, ever, the crops and pastures have been good. W. H. Mix. although needing rain in southern counties. Broomcorn cutting is under way in east central counties and will begin yield but are of poor quality; corn looking fine and will be in Henry County in about ten days.

#### Chicago, August 17, 1896.

The past week has been much cooler than the previous one, but still above normal temperature from 4° to 6° daily. Good showers have fallen throughout the central moved from its foundation four feet and near New Bedford and northern sections but the southern section is still with- trees one and a half feet in diameter were broken off. out good rain, except in the northwest part, and rain is much needed. In the central and northern counties crops have advanced finely, but in the southern section it is not so and the late corn crop will be materially shortened. Early corn in the southern section has been forced to an early maturity and cutting for silos and for the shock has already begun. In central and northern counties early corn is maturing finely and some cutting will be done in central counties the last of this week. The rains in central and northern counties delayed threshing still further and caused added injury to oats and wheat in the shock or stack; the work, however, is being pushed. Plowing has been resumed; second-crop clover and broomcorn cutting continue.

### Chicago, August 24, 1896.

The past week has averaged from 2° to 3° daily below the normal temperature, although warm on Friday and Saturday. The rainfall was largely local and very light, except throughout the northern section and the extreme south, where good showers fell. Central and northern counties report a continuation of favorable crop conditions but throughout most of the southern section the dryness has stopped the growth of late corn, late potatoes, pastures and gaidens and rain is much needed. Early corn is being cut over the entire state and the work will be general this week, while late corn is maturing fast and will be beyond frost injury in ten days to two weeks. Fall pastures promise well in central and northern counties. Broomcorn cutting is progressing in Henry County, with a good yield. Fall plowing is well along in the central section but delayed in southern counties by the dryness; threshing continues, also clover cutting.

#### Chicago, August 31, 1896.

The past week was clear, cool and dry, the temperature averaging from 3° to 4° daily below the normal and going very close to the frost line on the 27th-28th. Late crops have made good progress, except in the dry southern section.

Early corn cutting is general over the entire state and late corn is maturing rapidly; probable three-fourths of the corn crop are beyond possible injury by frost. Broomcorn cutting is nearing completion in east-central counties and is progressing in Henry. Second-crop clover cutting and hulling continues; some millet and much cane have also been cut. Fall pastures are good in the north half of the state but run out rapidly as you approach the dryer southern counties. Plowing continues over the state generally, and in the southern section where the rain of the 23d favored it: much ground is ready for sowing but little will be done before the 15th of Sept.

Dixon.—Lightning did considerable damage in all parts of this county during the storm of the 22d. Eustace Shaw.

CISNE.—Angust has been a dry month and at the end of it

Cazenovia.—Threshing is over; oats made a good average out of danger of frost by the 10th of Sept.

J. G. McWhinney.

Walnut.—A slight tornado occurred at 2 a.m. of the 22d; to the southeast of the village one mile a house was

O. C. Nussle.

Aurora.—The mean temperature of the soil at 6 a.m., was 68.6°, air temperature at the same hour 62.6°. The highest temperature of the soil was 78° on the mornings of the 9th, 10th, 11th, and 12th, the lowest 58° on the mornings of the 27th, 28th.

Friend Grove.—We had a very hot dry month to the 21st when relief came in a heavy rain. Since the rain breaking for wheat progresses rapidly. Apples continue to drop; the corn crop has been cut short some little by the dryness and bugs, late corn will be very poor; pastures good.

V. E. Majors.

#### Barometer and Wind Table.

		Bar	ome	ter,				Wind.		v. 22 w. 11 v. 22 w. 15										
Stations.		ŧ.		j.		l move- ment.	Average hour-	Maxi	mum city.	velo-										
	Mean.	Highest	Date,	Lowest	Date.	Total move ment.	Averag	Miles.	Direction,	Date,										
Bloo nington																				
Cairo	30.03	30.33	28	29.80	21	4,639	6.2	30	sw.	22										
Clucago	30.01	30.42	28	29.70	22	10,489	17.1	36	nw.											
Davenport	30.00	30.39	28	29.68	22	5,292	7.1	35	sw.											
Dubuque	29.99	30.39	28	29.68	22	2,941	4.0	28	nw.											
Galva	30.04	30.36	28	29.74	22															
Hannibal	30.02	30.40	28	29.09	21	5.332	7.2	34	nw.	15										
Keokuk	30.02	30.40	28	29.69	21	4,504	5.9	36	nw.											
Kishwaukee	30.03	30.34	28	29.71	22															
Minonk	30.03	30.38	28	29.74	22															
Olney	30.03	30.33	9	29.80	22															
Oswego	30.08	30.38	28	29.78	22															
Reynolds	30.00	30.38	28	29.70	21															
Robinson	30.03	30 - 35	28	29.78	22															
St, Louis	30.05	30.42	28	29.75	21	6,583	8.9	45	w.	16										
Springfield	30.03	30.41	28	29.74	22	5,237	7.0	22	nw.	26										
Rushvine																				
		****																		
Averages	30.03	30.38		29.73		5. 577	7.9													

## Climatological data for August, 1896.

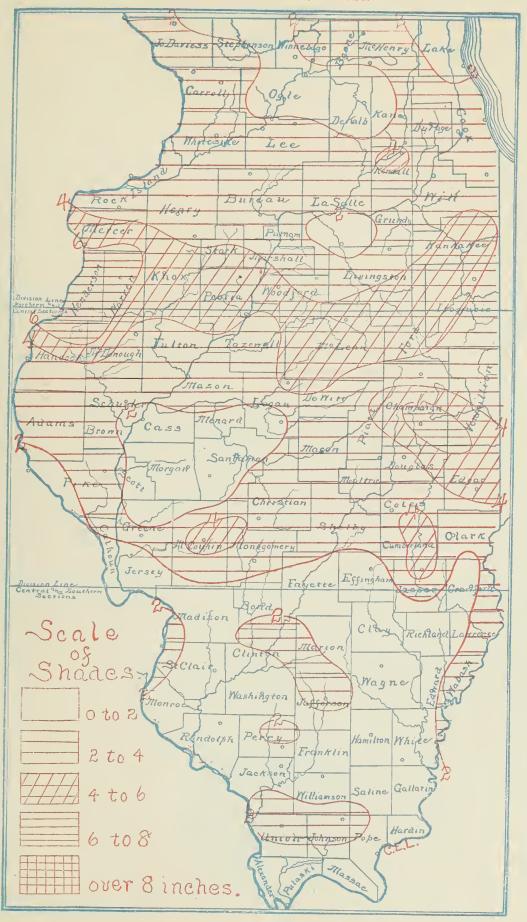
						Clim	ato	logi	cal	data	for	Augus	t, 18	96.						
*-			rd,	Temp	erature	e,in de	egree	es Fa	lıren	heit.	Pr	ecipitati	on, in	inche	۲.		Sky.		tion	
Stations.	Counties.	Elevation feet.	Length of record, years.	Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number rainy days.	Number clear days.	Number partly cloudy days.	Number cloudy days.	Prevailing direction of wind.	Observers.
NORTHERN SECTION																				
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Note,—Unless otherwise indicated the highest, lowest and mean temperature are from maximum and minimum thermometers. \*Highest and lowest temperature from observed readings. 1. Mean temperature from 7+2+9+9+4:2.8+8p+2:3.7a+7p+2:4.6a+6p+2:5.7a+2p+2.a, b. c, d, etc, number days missing @. U, S. Weather Bureau Stations. +Same temperature occurred on more than one day.

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15 4 OT 18 P C	1																					-	-			100					

t Trace, when precipitation is less than o.or of an inch.

REPORT FOR SEPTEMBER, 1896

# ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

# WEATHER BUREAU.

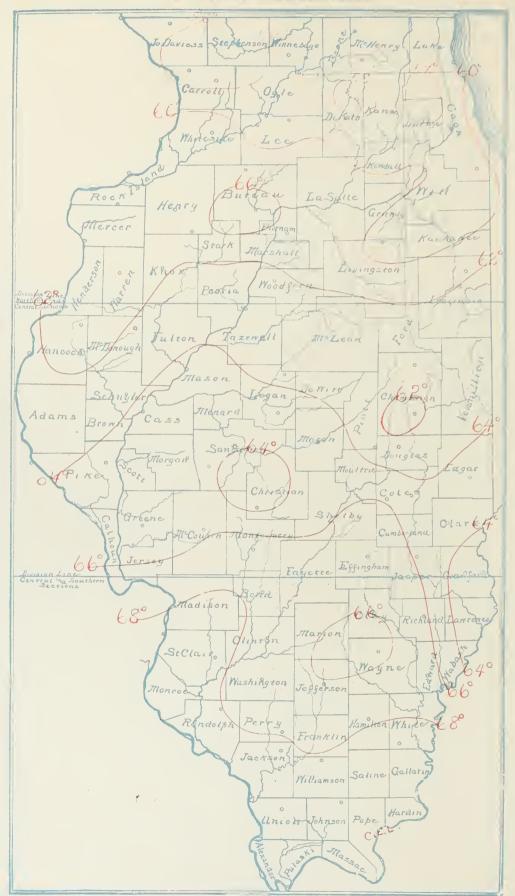
WILLIS L. MOORE,

BY

CHARLES E. LINNEY,
OBSERVER AND SECTION DIRECTOR, CHICAGO, ILL.



Natural History Survey
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U. S. DEPARTMENT OF AGRICULTURE,

# WEATHER BUREAU.

CENTRAL OFFICE: WASHINGTON, D. C.

# WILLIS L. MOORE,

Chief of Bureau.

JAMES BERRY, Chief of Climate and Crop Division.

# ILLINOIS SECTION.

CHARLES E. LINNEY, Section Pirector, Chicago, Iil.

Vol. I.

CHICAGO, ILL.

No. 5.

Very faint aurora was observed on the evenings of the 13th, 18th and 25th in northern counties.

Hail fell in small areas with the thunderstorms of the 2d, 5th, 14th, 16th, 17th and 26th.

Thunderstorms were scattered over the state on every day the past month except the 1st, 6th, 7th, 20th to 24th, 29th and 30th.

the southern section on the 18-19th, and from the central and northern sections on the 29-30th.

Climatically, the month of September was below the normal in temperature and considerably above the normal in rainfall. The temperature averaged nearly 3° daily below the normal: September in '79, '82, '88 and '90 was cooler. The rainfall averaged 2.41 inches above the normal, which is the greatest fall recorded within the state since systematic record have been kept; 1885 was nearly as large, however.

A warm wave prevailed over the state at the beginning of the month which was quickly followed by a cool period from the 3d to the 7th, when the one marked warm period of the month set in. This continued to the 10th in the northern section, to the 14th in the central and to the 18th in the southern, the dryness of the southern section aiding and continuing the heat. Maximum temperatures of nearly equal value were recorded from the 10th to the 17th, but the actual highest for the state, 100°, was recorded at Plnm Hill on the 11th, and at Mascoutah on the 13th.

The last half of the month was quite uniformily cool, but the marked cool period of the month occurred from the 19th to the 24th, a second one, of less severity and shorter duration, following from the 26th to the 29th. During the marked cool period of the month killing frosts occurred quite generally over the northern and central section and light frosts over the southern; many stations recorded temperatures below freezing. The exceptionally forward season which has been enjoyed by the state, caused these frosts to seem late, and, as a matter of fact, they caused little or no damage, but they were, nevertheless, very early and severe frosts. The great heat period of September, 1895, was broken by a cool wave on the 22d but the first severe frost did not occur until the 30th. The lowest temperature recorded within the state during the month was 27°, which was noted at Lanark on the morning of the 20th. This gives an extreme range in temperature of 63°, while the average of the greatest daily range was 36°.

The month proved a very wet one, as before suggested; the average rainfall for the state reaching the large amount of 5.46 inches. Conforming to the entire summer, the southern section had much the smallest amount, although generons showers fell in that section from the 15th to the 19th and again from the 25th to the 29th. Excepting the latter rain period, the storms which touched or crossed the state were largely local and even this rain period lasted a day longer temperature of the station has touched, or gone below, 32° in the central and northern section than in the southern. the southern section to be badly felt and the rains were much needed.

Limited areas within the state received very unusual falls of rains for the month, as at St. Charles 14.44 inches and at LaHarpe 12.28 inches, yet heavy falls within a short period A few excessive rainfalls were reported from stations in of time were not numerous, the showers being well scattered throughout the month. The largest fall recorded was 14.44 inches at St. Charles, the next largest 12.28 inches at LaHarpe; the least fall was 1.76 inches at Muddy Valley; the greatest fall in any 24 hours 3.62 inches at Friend Grove on the 18-19th.

Rainy days were much above normal throughout the northern and central sections, but about normal in the southern, the average for the state remaining about three days above normal. Clear, partly cloudy and cloudy days averaged 9, 12 and 9 respectively, which indicates a considerable lack of sunshine. The prevailing wind direction for the month was south although the wind was exceedingly variable. The average hourly velocity was 8.9 miles; total movement 6,385 miles; greatest velocity 45 miles from the west at Cairo on the 4th, and from the northwest at Keokuk on the 2d.

The mean atmospheric pressure for the state was 30.03 inches; highest 30.47 inches at Bloomington on the 23d, which day was generally the one of greatest pressure over the state; lowest pressure 29.40 inches at Chicago on the 30th.

#### THE PROGRESS OF THE CROP SEASON.

Chicago, September 7, 1896.

only light showers falling on the 2-3d and 4-5th; these ing being quite heavy over north and central counties and were too light to relieve the drouth conditions in the light throughout the southern section. Little or no damage southern section. The temperature of the week averaged resulted owing to the advance stage of all farm products. from 1° to 6° daily below normal, being coolest in north- Farm work has been pushed rapidly during the past week: the ern counties, where light frosts were reported. Corn cut-soil having been placed in excellent condition for work by ting is general and well advanced. Late corn is practically the rains of the previous week. Plowing was general over beyond frost injury, and a large crop is assured. Broom-the state, and seeding in central counties; the work is just corn and wild hav cutting are about completed; cane cutting beginning in the southern section and in some central counand field pea harvest continue, also potato digging. In ties, especially along the east side of the state, where fears of southern counties pastures are brown and bare, elsewhere damage by the fly and chinch bug have retarded the work. over the state fair to good pasturage is afforded. Rye sow- Early sown grain is up and growing finely; pastures are ing continues in northern counties, with early sown fields generally good, or reviving rapidly. up and looking well. Wheat land is being prepared, also general fall plowing done; wheat seeding will begin the last of this week, although good rains are needed to aid in the preparation of the soil. Winter apples are ripening rapidly: fall apples, late peaches and grapes are plentiful and fine.

## Chicago, September 14, 1896.

The past week was one of frequent good showers over northern and western counties but of very light rain or dryness over the southern half of the state, the extreme south- fast as possible. ern counties, especially, being very dry. The temperature averaged about normal and was generally favorable. In five miles north of Hillsboro, an inch and a half of rainfall the northern section and the west counties of the central was reported in the hour from 3.30 to 4.30 p.m. section farm work made good progress but elsewhere the dryness retarded plowing and seeding. Corn cutting has been pushed rapidly and most of the cutting has been husk and crib within two weeks. Plowing and seeding in 10th, lowest 46° on the 20th and 23rd. the dryer portions of the state have been much delayed or entirely stopped, and rain is much needed, especially in southern counties, where stock water is scarce and wells, streams and ponds are very low. In these counties pastures are brown and bare but become better as one progresses northward and are good in the northern section. Early sown rye is up and looking finely.

#### CHICAGO, SEPTEMBER 21, 1896.

The temperature of the past week averaged from 2° to 3° daily below the normal throughout the northern section, about normal in the central and from 3° to 4° daily above the normal throughout the southern section. Sunshine was much lacking and rainfall abundant, especially in the central section and most of the southern. The drouth conditions in the southern section and tendency toward drouth in the south and southeast counties of the central section have been effectually relieved. Little farm work was done during the week, first because of the dryness, later because of rains, but the ground has been placed in fine condition for plowing and seeding and much work will be done this week. In west-central counties considerable sowing has been done and some early fields are up, but, generally, dryness and the fear of damage by fly and chinch bugs have retarded the work. Rye sowing is farther advanced and much of the early sown grain is up and growing finely. Potato digging, cane cutting, late clover hulling and some corn cutting are still being done.

CHICAGO, SEPTEMBER 28, 1896.

The past week has given a continuation of cool weather, with good rains on Friday, Saturday and Sunday. Frost The past week has been cool, cloudy and mostly dry, occurred over the state on Wednesday and Thursday morn-

> Lanark,—Ice one-sixteenth of an inch in thickness formed on the night of the 19-20th. M. N. Wertz.

> Cobben.—A light earthquake shock was felt here at 10,55 p.m. of the 1st and also at 6.27 a.m. of the 10th.

John Buck.

Iron.—The first half of the month was dry with no plowing for wheat, the latter part wheat sowing was pushed as W. F. Hoskins.

Hillsboro.—On the 13th there was a heavy wind storm

P. J. Edwards.

Aurora.—The mean temperature of the soil at 6 a.m.du. done, the work will generally be finished this week. The ing September was 57.8°, the air at the same hour was 51.2°, grain is drying quickly and much of the crop will be safe to highest temperature of the soil at this hour 68° on the Chas. A. Love.

> MT. VERNON.—About one o'clock in the morning of the 17th there was a severe thunderstorm here, with heavy rain and wind. It developed the characteristics of a tornado visited the west part of the county. Theo. P. Steele.

## Barometer and Wind Table.

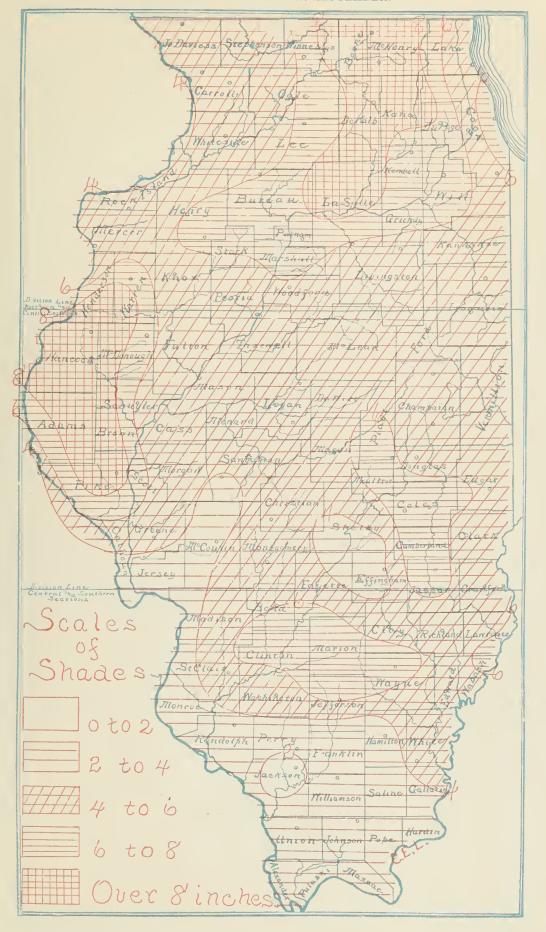
		Ва	rome	eter.				Wind		
Stations.	Mean.	Highest,	Date,	Lowest.	Date.	Total move- ment.	Average hour-	Max:	Direction, tion,	Date velo-
Bloomington Cairo Chicago Davenport Dubuque Galva Hannibal Keokuk Kishwaukee Minonk Olney Oswego Reynolds Robinson St, Louis Springfield Rushville	30.02 30.03 30.02 30.03 30.06 30.04 30.02 30.02 30.02 30.05 30.02	30. 47 30. 40 30. 42 30. 37 30. 45 30. 42 30. 37 30. 32 30. 37 30. 40 30. 38 30. 38	23 23 23 23 23 23 23 23 23 23 23 23 23 2	29,72 29,75 29,40 29,70 29,70 29,69 29,69 29,52 29,61 29,43 29,72 29,68 29,77 29,72	30 17 30 30 30 30 30 16 16 30 30 30 30 30 30 46 16 29	5,290 11,878 6,213 3,122 6,134 5,105 7,029 6,369	7·3 16.5 8.6 4·3 8.5 7·1	45 42 36 18 34 45	w. n. sw. sw. n. nw.	4 30 5 24 16 2
Averages	30.03	30.40		29.65	••••	6.385	8.9			

## Climatological data for September, 1896.

											ior s	Septem	ber,	1896.						
			ord,	Temp	peraturo	e,in de	egree	s Fa	hren	heit.	Pre	ecipitati -	on, in	inches	3.		Sky.		tion	
Stations.	Counties.	Elevation feet.	Length of reco years.	Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number rainy days.	Number clear days.	Number partly cloudy days.	Number cloudy days.	Prevailing direction of wind.	Observers.
NORTHERN SECTION	f * 1	200		EO. 9		88		40	200		6 10		. 00			**				Ivo P Cooper
Ashton	Lee * 1	830 676 824 823 824	 26	59.8 58.8 60.6 58.4 60.6	-5.0 : -2.9	88 87 88 88	2 9 2 2 10	39 29 37 30 40	28 23 20 20† 23	38 25 36 25	6,49 7,56 5,45 8,56 6,54	+4.30 +2.20 +3.71	1.88 2.64 1.22 2.16 2.42		13	10 8 4 6	15 14 18 5 13	5 8 8 19 8	ne. s.n s.sw w. ne	Ira R.George. Or. M. M.Robbins, S. B. Randall. Jos. Kuhles. Central Office.
Clear Creek	Putnam	503 613 725 651 657	25	61.3 60.6 59.4 59.6 59.0	-3.4	94 89 89 86 89	10 2 10 2 2	28 36 34 33 29	21 20 20† 28	39 31 36 33 36	6.35 3.98 4.66 5.67	+0.77 +1.58	2.20 0.96 1.15 2.11		18 19 16	7 6 12 7 6	12 11 10 11	11 13 8 12	sw. e. n. n. s.w	II. K. Smith. F. J. Walz @ Eustace Shaw. Paul Daniels. @ Prot. G. W. Horton.
Lwight Ft. Sheridan Galva Hospital	Lake Henry Kankakee a	695 843		59·5 60·7		87 89	10	35 35 35	23 201 201 23 201	34 38 29	5.09 5.60 6.68 5.82 6.69		1.49		10 17 14 8	9 II	15 13 11	9 8 8 12	nw. nw.	Post Surgeon, U. S. A. Prof. F. U. White. E. Ill. Hospital. F. M. Muhlig.
Joilet Knoxville LaGrange Lanark Martinton	Kinox * 5 Cook Carroll * 1 Iroquois			62.2 59.4 57.4	_o, 5	90 87 87	2) 10 2	33 34 34 27	20 20 20	29	5.28 5.39 4.78		1.00 1.93 1.01		15 10 11 14 10	9 6 11 .6	10 13 20 13	14 6 4	sw. sw. sw.	C. N. Butt. Prof. F. E. Sanford M. N. Wertz. Geo. Bunker.
Minonk	Woodford * 1 Warren Ogle Kendall * 1	745 784 762 650	15			89 90 89 87	2 2 10	35 29 33 32	23 23 20 20 23	39 36 31	5.50 4.53 6.02 5.61 7.51	+4.67	1.99 2.01		10 18 13	2 I0 I0	23 12 17 8	5 8 3 12	ne, ne, ne, ne,	D. J. Strang. Rev. A. P. Hatch. J. S. Seely
OttawaReynoldsRileyRockford	LaSalle 1	500 800 956 763	35	61.7	+0.5 -4.0 -3.5	92 83 87 89	10 2 2 10	33 31 31 32	23 23 201 201 23	37 31 29 31	9.38 4.44 9.45 8.33	+0.22 +0.44 +5.66 +5.59	3.21 0.83 2.93 2.30		13 18 15	6 10 4 19	11 11 16 2	13 9 10 9	n. n. sw.	Dr. J. O. Harris. Thos. C. Lewis. John West James. Hosmer C. Porter.
Round Grove	Whiteside Jo Daviess	715 700		60.6 59.2 :8.5		89 80 80 89	2 9 2	32 32 28 32	20 23 201 201	39	5.10 14.44 5.11 3.44	1 3+39	1.01 2.50 1.91		13	15 10 7 9	9 8 11 15	6 12 12 6	w. sw. nw.	R. A. Hawley. S. L. Adams. Joseph Vipond. R. Williams.
Sycan ore	De Kalb 1 Bureau * 3	855 798 717	15	57.9	-3.6 	87 87	2 2	33	20 201	31 	8.39 6.70 5.94	+5.47	2.68 :.20 I.18		15	10 8 8	14 15 16 25	6 7 6	ne. sw. sw. n. w	Roswell Dow, W. 1. Greeley, O. C. Nussle, Wm. H. Johnson.
WinnebagoZiop	Winnebago 1	900	s	58·4 56·8 59·8		λ7 89	8	31	20	32 40	5.61 4.53 6.42	+1.18	1.51		13 15	11 8 8	12 8 15	5 7 14 9	sw. s. sw.	Frank Osborn. Robert McGrath.
CENTRAL SECTION' Alexander	Morgan		١				10	31	20	38	5-49		2.25		14	3	19	8	nw.	George II. Hall.
Atwood	McLean McDonough	853 672	11	63.3		93 ••••	14 10	3- 3- 	23	38	0.57 5.+/ 3.87		1.74		11	9 8 	 9  8	16	ne. n. se.	J. W. C. Gray. Prof. M. J. Elrod. Dan E. Zook. R. O. Purviance.
( arrollton	Coles 1	720		64.0			IO IO† 	38 36 35 38	23 201 20 23	32 32 34 30	5.80	+3.52	1.92 1.68		15 10	4 10 5 12	14 12 4 10	8 7 8	se. n. n.ne ne.	Prof. Clyde Slone, Jacob B. Dazey, C. A. Murrah, Prof. J. II, Coonradt,
East re ria  I ffiingham Griggsville hannibal, Mo				60.9 68.3  63.2		93 97 95 94	12 10 2	33 	23 30 23	40 44 38 32	3.80 9.32 3.54	+0.54			. 10	6 19 8 10	12 1 14 8	12 10 8 12	ne.	C. L. Farrington. E. B. Schooley. Emily R. Gray. E. H. Nimmo. @
IlavanaIlillsboro Keokuk, Ia LaHarpe	Montgomery 1 Lee Hancock 1	475 686 613	24	66.9 62.5 60.2	-2.9	91 94 92 89	10 10† 2 2	40 37 39 32	20 23 20 20	33 33 36	5.30 4.80 9.44 12.28	+0.99 +5.92 +8.22	1.43 2.48 2.94 3.00		14 19	9 9 9 7	10 16 7 19	5 14 4	nw. nw. n. ne,	Genl. J. M. Ruggles. P. J. Edwards. Fred Z. Gosewisch. @ Frank Cambell.
Martinsville	Coles* 1 Christian Logan	744 685	10	66.4 63.7 64.5	-1.0	92 96 95 92	11† 13 10	34 41 33 38	23 20 201 23	31	4.30 6.11 4.44 5.06	+2.92	I.21 I.04		14 12 11	12 11 8	8 6 10 17	14 12 9 5	sw.	Z. K. Wood.
Palestine	Edgara Peoria 1 Champaign 1		41		-3.0 -1.0	94 98 93 93	12 15 2 12	32 31 36 29	24 23 23 22	35 33 43	4.30 5.94 4.80 5.02	+1.19	1.55 1.98 1.20 1.45		12 14 9	6 9 7 5	19 6 13 17	5 14 10 8	se, sw. s. ne.	John E. Templeton. L. B. Myers. br. Fred Brendel. II. A. Burr.
RantoulRobinsonRose Hill	(rawford *3 Jasper 1 Sangamon	669	16	63.8	-3.0	90 94 91	10† 11† 12 10	35 40 	23	36	5.73 4.68 6.93 5.42	+2.23	1 53		9 10 15	9 6 8	8 9 17 10	12 7 12	ne. sw. nw.	II. B. ( lark. A. P. Woodworth. Isaac Kibler. John ('raig. @ Irwin Lester.
	Douglas					91	13	29 34	23	37	5.69		1.62			9	14	7	n. ne.	ii wiii bestel.
AlbionCairo		359	25	69.4	-0.3	96 97 90	11 <sup>+</sup> 17 12	37 44 28	23† 23 23	39 30	5.68 2.95 6.64	+0.39	2.74 1.29 2.36		7	17 8 11	8 16 11	5 6 8	ne. s.	B. F. Michels, P. II. Smyth. @ W. H. Mix.
Cobden	Wabash * 4 Pope	656 580		68.2 62.2	-1.9 -0.1	98  97 98	11†  11† 13†	34 34 31 37	2 ‡ 2 3 2 ‡ 2 3	44 44 41	2.38 7.56 3.01 5.82	+1.52	0.80		9 12 7	6 16 18 5	18 10 4 11	6 4 8 14	sw. s. nw. se.	John Buck. V. E. Majors. as. Ham nons. Prof. M. S. Oudyn.
Ilerrin	Williamson * 1 White * Randolph	510 480	9	68.2		95 98 95 95	14 12 12 12	42 42 33 39	24 23 23 23	32 39 36	2.60 4.27 3.15 4.23	+1.58	I.43 I.67		4 11 12	6 8 7 9	18 14 19 14	6 8 4 7	sw. sw.	W. F. Hoskins. W. J. S. Catheart. Belford A. Jenkins.
McLeanboro Mascoutah Mt. Vernon New Burnside	St lair * 5 Jefferson Johnson	511 269			+1.1	98 100 97 99	12 13 13	38 42 39 35	2, 23 24 23	39 30 40	3.91 5.80 6.19 2.54	+1.22	2.25		9 9 7	4 4 12 10 8	10 10 6	5 16 8 14 10	sw. se. s.	John Judd. Dr. G. Leibrock. Theo. P. Steele. George Harris. Victor E. Philips
Olney	Washington * .g Perry 1 St. Louis	 571	26	68.8 69.4 67.3 68.2	-2.0	97 100 95 95	12 11 12 13	49 39 44 45	23 23 26†	39 31	4.57 5.88 2.70 2. <sub>+2</sub>	+1.96 -0.70	2.50 1.24 0.70		7 7 12	7 13 8	12 13 13 15	3 4 7 8	s. nw. sw. s.	Victor E. Philips. J. C. Chesney. Godfrey Kuetzger. Dr. H. C. Frankenfield.@
Averages for the	state	• • • • • •	21	62.9	······································	96 92		38 35		38 36	5.40	+1.41			12	9	13	9	s.	

Note,—Unless otherwise indicated the highest, lowest and mean temperature are from maximum and minimum thermometers. \*Highest and lowest temperature from observed readings. 1. Nean temperature from 7+2+9+9-4; 2. 8a+8p+2; 3. 7a+7p+2; 4. 6a+6p+2; 5. 7a+2p+2. a, b. c, d, etc, number days missing 6g. U, S. Weather Bureau Stations. \*Same temperature occurred on more than one day.

	Maximum and minimum temperatures for September, 1896.
;	3. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30.
Stations.	Min. Max. Min. Max. Min. Max. Min. Max. Min. Max. Min. Max. Min. Min. Min. Min. Min. Min. Min. Min
Autoral Autoral SouthERN SECTION.  (ambridge   178   1	2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2
Alexander   CENTRAL SECTION   85	8.8 8 9 9 6 9 6 9 7 8 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
Albion southern section.  ( alto ( calto ( cal	8.6 (1.8) (1.9) (1



# Daily precipitation for September, 1896.

														1	DAY	OF 3	ONT	ıı.													
Stations.	,	·)	.,	1	PL.	c:	7	Q.	0	1()	11	112	19	1.1	15	18	17	16/	10	1803	91	0.3	(JF)	94	115	180	27. 2	. 1		a 94	Pofa
1		2.	٠٠.	4.	Э,	0.		0,	<i>y</i> .	10.	11.	12.	13.	11.	10.	10.	17.	18.	19.	233.	21.	22.	25.	23	2),	200.	21. 2	24.  2	29. B	0. 31	
NORTHERN SECTION.																											1				
Asliton		+19		-08	.26			.07		.02	*9c	. 10	. 14	1.87	.01	+		+43						+	-34	. 25			.621.	. 81	6.49
Anrora		. 36		1.67	. 1 2			+	+	+	.60	1,01	*50	1.17	+	.19		.89	. 02					.39	. 30	.05			. 39 1.	68	7.5%
Chemung		.42		-45	-57			. 20		.60	.50	+	-90	1.61		, 06		. 27	+						•57	.25			2.	16	8.56
Cheming Chicago. Clear Creek.		.15	7	+					+	.20	2.20	*37	·95	.40	+	+		1.00	.04					. 35	.00		.01		.30 1.	27 60	6 25
Daven port, Ia  Dixon  Dubuque, Ia  Dixight		-04	.09	•14	.08			. 04	. 04	.09	.05	.03	+	-95	.01	-17		- 30	+						.50	.39	.07		50 .	49	3.95
Dubuque, Ia		.07	.05	•04	. 19			.08	. 32	,62	.33	.30	.00	2.11	.04	+01 +08	.02	· 3×	+						. 50	. 30	.02 .		, 24 I .	15	4.66
Dwight		.33	.02					+			.53			,60				. 25	.13						.17	.22		. 1	30 1.	54	5.09
Ft. Sheridan		. 37	.75	.04	.00			.02	.05	+	+17 T-40	-95	. 18	I.II		.03	• • • •	. 24				. 08			.22	.65	.02		01 1.	00 os	5-60
Bygni Ft. Sheridan Galva. Genwood Hospital			- 16		.13						.10	.84	.71					1.00						.06		-51		20	54 1.	42	5.67
Hospital Joliet Knoxville. LaGrange. Lanark		.16									. 141	- 25		82	.71			-51				.02			-18	1.93			10 2,	00 .	5.×2
Knoxville		· I 2		1	,			†		.75	.75	.63	†	1	.63	+/		1.00						•37		.40		+ .	.50 .	13	5.25
LaGrange			-19		-41			. 16.	+		.23	. 37	.64	1.93				58	†			.07			-15	+			60 .	02	5.39
Martiniton			.50		, ,																										5.50
Minonk	•••	•9		.02				1 02			. 33	27		. 15		-05		-40				+	!		. 28	- 18	. 24	+ .	83 1.	39	4.53
Monmouth			.03	.15	. 18			-05		.07	.75	+	. 05	1.59				.24						'	.53	. 32			53 1.	09	5.61
Oswego		. 17		.10	+ 05			.05			. 2	1.22	· 4:	1.3				.65							.34	· (/b) ,		. 2.	.00 ,1	96	7.51 9.38
Reynolds		.23	.03	.01	. (7			• 04	1	.10	. 28	.08	. 02	+41	+	.13		.72	.02						.83	.62	. 01		35	1×	4.44
Riley	•••	-69	. 2	7	15			.08	· IC	12	.0.	• 04	-8:	2.93	1.0	+		. 20		• • • •					- 48	.13			49 1.1	64	9-45
Rockford		-07	.08	-45				.42	.05		.50		.03	.86				. 32							.66	.16	.28 .		93 1.	01	5.10
St. ( harles		- 55		. 05	1.05			7	. 12		- 56	1.76	2.40	2.50				1.10							.40	.10	.06	† I.	×5 2.1	(x	1.4 4.4
Streator g								.02		.05	.16	. 05	[	.02				.80							. 15	. 20		+ 2.	.00 .1	05	3 44
Sycamore		. 75		10	· AI			. ((0)		. [ ]	- 41	. 22	- 80	2.71				. 35				'		.12		.14			26 1	S.A	9 20
Tiskilwa Walnut Wheaton		. 17		.05	+			.00		1	• 59	.18	06	.70		.03		.60	.06					+	.43	.82	.10		.93 I.	15	5.04
Wheaton		.31		.07	-35	• • • •		.07			+50	.75	1.34	2.20				. 56			• • • •	.03			• 33	.07		1.	45 1.	00	9.09
Winnebago Zion		•37 •05		•35	.08			.23		-15	. 30	. 10	- 3n	1.00		.10		.23				.10		.30	.45	.30			60 1.	91 · · · ·	5.61
	00	.20	.10	.09	.20	.00	•00	.46	.02	.10	+48	•4I	.38	1.12	.06	.05	+	- 55	+01	.00	.00	.01	• 00	. 06	.30	.31	.03 .	02 .	75 1.	o8	6.42
CENTRAL SECTION.	-10					- 1												- 1													8
Alexander			.62	+		• • • • • •		+			.11	+	+	.03	.20	.18	2.25	.24	- 35	• • • •					.05	.70	.13 .	15 .	25 .	20	5.49
Atwood			2.12											+ A U	. 4.5		. 30	. 10	· 40						0 1 6		.13 .		3/160	13	6 57
Bloomingion		.84									. 77				.01	. IA		.47	. 21						-15	.02 .		02 .	40 1 .	74	F 40
Bushmell			.08	.02			.	+	+				+	.01	. 22	2.28		•35	.30					.03			.13 .	23		22	2.57
Charlestonn															1	.01	1.081	. 80	. 17					T	. 21	. 37	.07	20 .	.03 .	20	4 46
Decainr			1.71	+				. 081			+				5.7	-10	-81	. 24	28						404	62		nh nh	AC .	70	- 60
East PeoriaEffingham		.85		.40				.30		т	.12			•33		.50	.20	.60						.17		. 30	.70 .	35 •	20 .	30	4.09
Graffon			-11	22				.13	.08						408	+11	.07	.32	1.47						.03			45 .	30		3.37
Griggsville	::I.	.85	. 36	+				.03	.04		.79	1.02		.93		3.41	.17	•58 •48	.70					т	.15	.62		13 .	00	06	9.32
Havana			-87	n8				+	.03	.02	.72	.02		.02	.02	. 30	*	.71	. 42						. 30	15	20	+ .	52 6	nn	F 30
Hillsboro	:: '	.43	. 25	.07				. OI	.13	.31	2.11	.55	+	. 04	.16	1.67	1.27	. 25	.66					+	.54	.05	.05	30 .	04 .	36	4.80
La narje	1	.00		. 12				. 151	.12	2.45	. 25	. 11	. 041	• 45	+ UO	3.00	. 43	2.35							. / 0	.05		34 .	24		12.25
Loami			.30	.03							.23		.10	. 30	. 29	7	.43	.20	.44						+	.00	. 58	18 .	28 .	00	3-99
Martinsville			.67	.09				.29						.25	.07		-55	.97	1.22		• • • •				.10	.64 .		23 1 .	03		6.11
Morrisonville			T 04					+			21				12	.80	50	0.1	4.5						0.2	62		+	22	E 4	e 06
Palestine			†	+									+	†	.10		.75		-75		• • • •	• • • • •			.10	.10	.80 .	75 -	45 -	50	4.30
Paris		.51	.44	.02	.00						.53				.30	.10	.12	.15	1.98						.90	.18	.10 .	76	20 1.	20	5.94
Philo		.60	.90													.27		.10	.48							1.00		23 .	90 .	54	5.02
Rantoul		.07	.01	.05				.05			.05			.02				1.88							.02	.45		20 1.	53		5.73
Robinson	٠		.60	+	†			10.		• • • •	. 23			.04	.11	.21	1 - 34	.02	-39			+ 1			.04	1.39	.08 .	02 .	44 -:	30	5.42
Tuscola	00	.20	.48	.04	7	.00	.00	-05	.0:	.09	.23	.06	.01	.13	.15	.48	-53	.13	• 45	.00	.00	+	•00	.01	-14	.05	.73 .	02 .	33 .	50	5.09
SOUTHERN SECTION.																															
Albion			.c6		.24											.83			2.74							1	.47 .	15 .	19		5.68
Cairo			4.		.78						'				+				. 27		.32				11	.09 1	.29 .1	09	+   .	†	2.95
Chester					.58			.15											.17		.18				.17	1	.15		15 .0	03	2.58
Cisue				.18	N.,			.22						••••	•19		.61	.56	1.80		.14	• • • •		• • • • •	.25	.18	.80 .1	67 .	16 .0	02	6.64
Chester Cisne Cobden Friends Grove Goleonda Greenville Herrin Iron Jordans Grove Louisville McLeanboro Mascoutah Mt. Vernon			+		.19			r							+	]	.23		3.62		†				.03	1	.25 1.	11 .	08 .	05	7.56
Golconda			1		.70			-bul				F					-15		. 20	• • • •	.12				.11	† 1	.01 .0	65	06		3.01
Herrin	: :			. 25											.07	.25		.50	.10		.20				.20	.50 1	.00 .	25 .	10		2.60
Iron	٠			-3.5	20	• • • •	• • • •	.10									•66		· · · ·	• • • •	.04					7.4	.98 1.	28	14		4.27
Louisville			.27	+	+30			.03					+	.04	.02	+	.75	+	.70		+				.17	+	.37 1.	30 .	04 .0	09	4.23
McLeanboro	٠٠ .		1		. 29			• • •				.18					-46		.25		.12				.15	.46	.49	44 .	77		3.91
Mt. Vernon				.20				. 20							+		.80	2.25	2.70		.05			.17	-30	† 1	.44	50 .	06		6.10
Anddy Uallay				-				20													25			12			84	07	06		1 96
New Burnside Olney Plam Hill	• • •		.05	 .00	•99			+				.46	+	+	, 22	1.05	.20	+	1.06						.14	.00	.70 .	86 .	18	22	4.57
Plum Hill					. 34			.33						.m.	.74				2.50						. 29	1	.68				5.88
St. Louis, Mo			+	.31	.14		1.	.32		+	+	.02		.02	+	.01	132	.01	.60						.25	.36	.19	32 .	04	· · · · · ·	2.70
St. John St. Louis, Mo Averages State averages	00	.00	.02	.09	.26	10.	1	11.	.00	+	+	.03	+	.01	.06	.14	.73	.18	.88	.00	.07	.00	.00	10.	.13	.19	.68	56 .	10 .0	02	4.24
State averages	00	- 15	.21	.07	.15	T	1	.07	.01	.07	. 28	20	.16	.51	.07	. 22	.30	- 44	•37	,00	.02	T	.00	.03	.20	.30	• 23 •	21 .	40 .0	JL	5.40

Trace, when precipitation is less than o.or of an inch.

a. b, c, d, etc, number days missing,

REPORT FOR OCTOBER, 1896

# ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

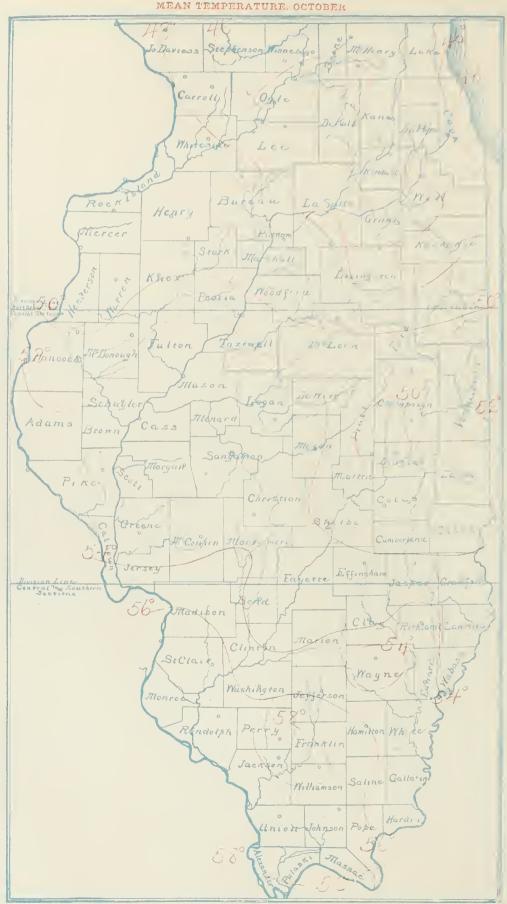
# WEATHER BUREAU.

WILLIS L. MOORE,

BX

CHARLES E. LINNEY,
OBSERVER AND SECTION DIRECTOR, CHICAGO, ILL.





U. S. DEPARTMENT OF AGRICULTURE,

# CLIMATE AND CROP SERVICE

OF THE

# WEATHER BUREAU.

Central Office, ) Washington, D. C. ( WILLIS L. MOORE, Chief.

ILLINOIS SECTION, CHARLES E. LINNEY, Section Director,

CHICAGO, ILL.

Vol. I.

CHICAGO, ILL.

No. 6.

The correct elevation for nearly every station has now been secured, those lacking will be given shortly.

With the approach of the snow season preparation should be made to secure accurate snowfall measurements.

Excessive rainfall was entirely lacking during the month as one would readily suppose from the small measurements.

The prompt mailing of reports is a prime requisite; be sure your envelope goes into the mail on the day following the end of each month.

The unnsual smallness of the rainfall during the month causes our scale of shades on the precipitation map to be of little value. We have, however, drawn lines to enclose areas of less than an inch by which means these will readily be discerned.

Few miscellaneous phenomena were reported by our observers during October. The northern section was the most prolific but even in it there were few to note. Aurora was observed on the 18th, 19th, 21st, 24th and 25th; sleet fell on the 17th and 19th, hail (small and light) on the 16th, 19th, and 29th; lunar halos were noted on the 12th, 15th, 18th, 19th, 20th, 22d, 28th and 29th; solar halos were noted on the 15th, 19th, 22d, 23d, 27th, 28th. Thunderstorms occurred on the 10th, 28th, 29th, and fog on the 1st, 2d, 3d, 16th and 17th. In the central and southern section lunar and solar halos were noted on nearly the same days; thunderstorms occurred on the 2d, 6th, 19th and 29th and fog on the 3d, 4th, 5th, 13th, 16th, 18th, 21st, 27th and and 29th.

The month of October was a cool, dry one, averaging nearly 3° daily below the normal temperature and 1.60 inches below the normal rainfall. It was, however, neither as cool nor as dry as October 1895; the latter month was 2.4°

cooler, and 0.62 of an inch below in rainfall, in fact the average rainfall for 1896 is just twice that of 1895.

There was but one marked warm period during the month, and it came from the 27th to the 29th, during which time the maximum temperature of the month generally occurred. The southern section was favored by comparatively high temperatures at the beginning of the month and at some of the stations in this section the maximum temperature occurred during this period. The highest noted within the state was 87°, at Golconda on the 14th.

The cool uniform, dry weather of the month caused the cool periods to be little appreciated. A slightly depression, below the steady coolness, occurred on the 7-8th and a second and more marked one, from the 17th to the 24th; when freezing temperature and killing frosts occurred throughout the entire state. It was during the latter period also that the minimum temperatures were generally recorded. The lowest temperature within the state during the month was 17° recorded at Lanark on the 21st. This gives an extreme range of 70°; while the average of the greatest daily range was 37°.

Rainfall was much lacking, especially in the north and east parts of the state. More than one half of the state had less than an inch of rain and a small section of LaSalle. Marshall and Putman counties had less than one-tenth of an inch. The first rain period of the month began in the north section on the 10th and extended over the central and southern sections on the 11th and 12th; the second occurred on the 19th, but was very light and scattering in the central and southern section; the third and last period began on the 28th and continued until the night of the 29th, giving the most general rain throughout the northern section. In the south half of the state light rains fell on the 6th and more generous rains on the 23d, but the month as a whole was a dry one. The greatest fall recorded within the state was 2.80 inches at Greenville, the least 0.05 at Streator. There were but four days with rain, considering all of the stations, which is about half the normal season. Sunshine was proportionally large, the averages show 17 clear days during the month, 9 partly cloudy and 5 cloudy.

Snow fell quite generally over the north half of the state on the 17th and 19th, but the amount was small except along the lake shore, where two to three inches fell, melting as it fell. The average for the state was but a trace.

The prevailing wind direction for the month was northwest, the average hourly velocity 8.8 miles and the greatest velocity 62 miles from the south at Chicago on the 29th of the month. The atmospheric pressure averaged 30.05 inches, as measured by the barometer at fourteen stations; the highest pressure was 30.41 inches at Chicago on the 8th, and the lowest 29.41 at Davenport and Reynolds on the 29th. This gives an extreme range of just one inch for the state and resembles closely the rise and fall in the barometer which is common during the winter months.

#### CONDITION OF FARM WORK AND WINTER GRAIN.

Throughout the northern section October was a cool, dry month, many stations being practically without rainfall. and at all it was very light. The fine cool weather, however, permitted rapid progress in corn picking, which became general by the 15th and much of the crop is now husked and cribbed; the yield is large. Some plowing was done, potato digging finished, apple picking completed and things placed in shape for winter. Little wheat is sown in the northern section, but what was came up favorable owing to the gen- of wheat, but has had a good effect upon corn which is erous rains the last of September; rye is excellent, but, with being husked and cribbed; the largest yield, both in grasses, has made slow growth because of the dryness during quantity and quality, for years, the month. Stock is generally in fine condition.

Throughout the central section the month was cool and dry, the temperature averaging about 3° daily below the normal. Rainfall was much lacking, the showers being few and very light. Wheat sowing was generally completed by the 10th, with the early sown up at that time and showing a good stand; later sown came finely but the dryness the latter part of the month caused slow growth; rye was generally sown early and got a good start. Corn picking became general by the 10th; the crop has been husked and cribbed rapidly and is large. Potato digging, clover hulling, and apple picking were generally finished early in the month; some plowing was done but after the middle of the month the ground became too dry; pastures have gradually failed Some fall plowing has been done and the soil turns over from lack of moisture.

comparatively dry, although more rain fell in this section several mornings. Most of the month was fine and dry, than either the central or northern. Farm work was push-; with a hazy air like Indian summer, but cool. The total ed rapidly at the beginning of the month, the rain at the precipitation 36 of an inch, was the smallest amount I have end of September having placed the soil in good condition recorded in 37 years and 2.04 below the normal. The mean for plowing and seeding. Most of the wheat crop was sown temperature was 2.2 below the normal. by the 10th and, though it has a fair stand, the later growth has been slow owing to a lack of rainfall. Corn picking has been rapidly done, and potato digging, clover hulling and apple picking have been finished favorable. Fall sown timothy came up finely, and fall pastures were generally good during the first part of the month.

### OBSERVERS NOTES.

HAVANA.—First trace of snow fell at 2 a, m. of the J. M. Ruggles. 18th,

Galva.—On the 29th, from 8.05 p. m. to 8.25 p. m., 0.66 of an inch of rain fell, the barometer mean time, rising rapidly .06 of an inch, but it again fell back as soon as the storm was passed. F. U. White.

Toulon.—October was a very pleasant month, no storm of any severity. More corn was picked, and cribbed than was ever known before this early. Corn is turning out well and is of good quality. Henry Nowlan.

ATLANTA.—A remarkably pleasant month, cool but most-

ly clear, a few raw cloudy days. The ground was getting dry, before the rain of the 29th. Wheat is looking well and corn husking is all through. R. W. Burt.

WHEATON, -Snow fell nearly all day the 17th, melting nearly as fast as it fell. The month was a pleasant one and work off all kinds is very forward. The precipitation of the month was very light. Wm. H. Johnson.

Ramsey.—Continued dry weather has retarded the growth L. F. Stoddard, M. D.

Louisville.—The first killing frost of the season reached here on the 18th, although a light frost touched tender plants on the 9th. The month was very favorable for saving the apple crop, and gathering corn, which is a large crop. Belford A. Jenkins.

Aurora.—The mean temperature of the soil at 6 a.m. was 43.7°, that of the air at the same hour 37.2°: October. 1895, the soil temperature was the same. The highest temperature of the soil was 54° on the 28th, the lowest 34° on several days, Chas. A. Love.

Ryley.—Winter grain is in good condition, also stock. well. Corn husking is well along. A trace of snow fell on In the southern section the month was also cool and on the 17th and 31st, and the ground was slightly frozen on

John West James.

Barometer and Wind Table.

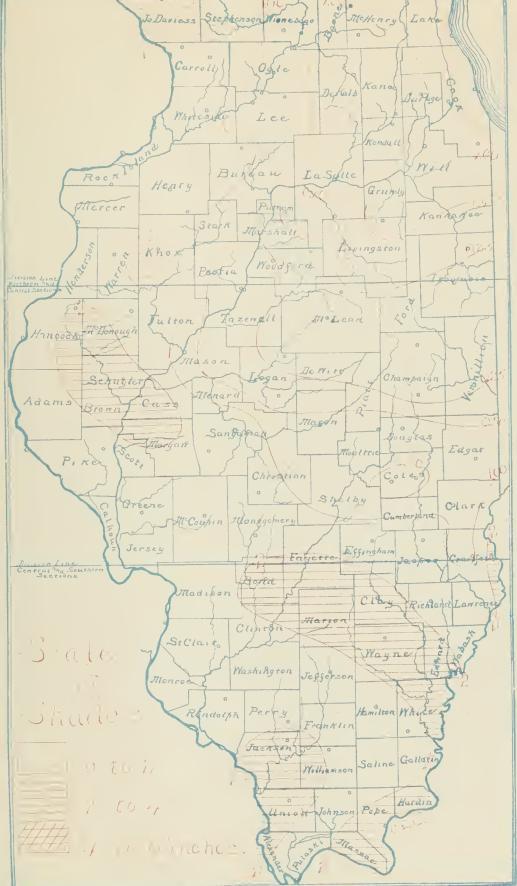
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# Climatological data for October, 1896.

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Note,—Unless otherwise indicated the highest, lowest and mean temperature are from maximum and minimum thermometers. \*Highest and lowest temperature from observed readings. 1. Mean temperature from 7+2+9+9+4:2.8+8+8p-2:3.7+7+9+2:4.6+6+6+2:5.7+2+2+2.8+2+2.8+2+3.5 Weather Bureau Stations. \*Same temperature occurred on more than one day. + Trace in precipitation column when amount is less than 0.01 of an inch.

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# Daily precipitation for October, 1896.

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Riley					†					.15						.02	.02		.01										. 15	.03	+	0.38
Round Grove								• • • • •		.15				****		1											+	+	.50	. 20		0.75
St ( Darles										,						. 02	. 10											+	.14	. 16		0.40
Scales Mound										+										• • • •									.03			
Sycamore										. 10						4	. 02												.10	10.		0.05
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CENTRAL SECTION.																									м			- 0				/5
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Atlanta																			.03										.14			0.23
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reoria Philo Rantoul Robinson Springfield Tuscola Averages						.10					.10	+			• • • •		+	+	.06									4	.08			0.20
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Springfield		.02				.40					1.00	. 23				• • • • •		+	+	• • • • •			+					+	.05	† .	,	1.76
Averages	.00	. 05	.00	.00	+	.18	•00	, co	,00	.06	. 30	.10	†	.00	.00	+	†	+	.01	.01	.00	.00	.02	.00	00	.00	.00	.01	.23	.12	.00	1.11
SOUTHERN SECTION.																								1	1							
Albion						.40					.96												.69		.1.				,			2.05
Cairo		t									.03	.02	†		• • • •					.02			10.1						. 04	.01		1.73
Chester											. 15	.75	.03						7				. 85							.12		1.90
Coldan		• 04				- 33					1.25	.10							. 11				. 31						. 29			2.32
Cisne. Cobden Friends Grove Golconda Greenville Herrin Iron Jordans Grove Louisville Mer eamboro Mascoutali Mt. Vernon Suddy Valley						.23					.92	1							.10				+						•11	.66		1.48
Golconda										7	.71	+								+			1.72					. 36				2.79
Петін		.03				- 54					1.15	-46							. 50	.03			1.00						.04 .			2,80
Iron											1,13												.74									1.87
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Mer earboro		.06				.47					.92	7								+			.65						.10'.			1.73
Mascoutali						.50				• • •	.70	.10							.30	• • • •			.20						.10			1.90
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Nuddy Valley New Burnside Olney Plum 16ill											10.	.05	7			. ,							10.0						. 68			1.74
Plum Bill						* * * *					1.13	.13							.02	.22			.19						,10.			1.59
Plum Itill St. John St. Louis, Mo.											1.12									.05			.70					+	. 67			1.94
St. Louis, Mo		1				+40		• • • •		10.	. 24	7"							. 17	+11			.07		4			+ 02	.18	.02		2.00
Averages State averages	.00	.01	,00	.00	+	,11	.00	,00	.00	.05	.32	.05	4.	.00	.00	.00	.02	†	.03	.02	.00	.00	.14	.00	+	.00	+	.02	. 25	. 14	+	1.24
																									-1							

<sup>+</sup>Trace, when precipitation is less than o.or of an inch.

REPORT FOR NOVEMBER, 1896

# ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

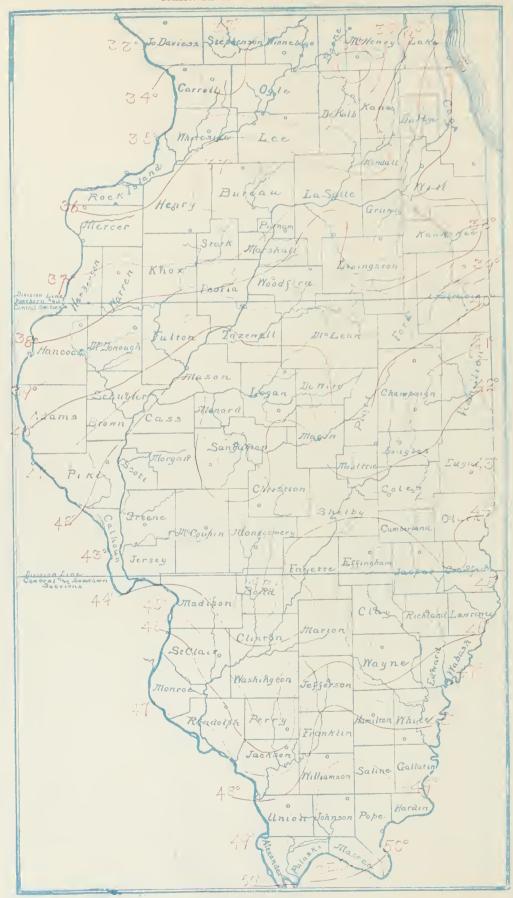
# WEATHER BUREAU.

WILLIS L. MOORE,

BX

CHARLES E. LINNEY,
OBSERVER AND SECTION DIRECTOR, CHICAGO, ILL.





U. S. DEPARTMENT OF AGRICULTURE,

# CLIMATE

OF THE

# WEATHER BUREAU.

Central Office, Washington, D. C. (WILLIS L. MOORE. Chief.

ILLINOIS SECTION, CHARLES E. LINNEY, Section Director, CHICAGO, 11 L.

Vol. I.

CHICAGO, ILL.

No. 7.

Observers needing forms, envelopes, carbons, measuring sticks or other supplies should address the Chicago office.

Lunar Halos were noticed on the 13th, 14th, 18th and 19th, solar halos on the 2d, 4th, 9th, 17th and 19th.

Fog prevailed over the state on the 23d and 24th, but was also observered at individual stations on the 3d, 19th, 20th, 21st, 22d and 25th.

Readings of your thermometers below zero should always be indicated by a simple dash (-) before the figures; readings above zero should have no mark of any character, just the plain figures, and avoid fractions if possible.

Thunderstorms were common over the state on the 2d, 3d and 4th and again in the southern section on the 26-27th, Sleet or fine hail occurred very generally on the 27th and 28th, there were also a few stations reported sleet on the 5th, 10th, 11th, 19th and 20th.

November was a month of rather erratic temperatures although the general average for the state was very close to mon, and at two stations 80° were recorded, while minimum than the normal cloudiness. The wind was generally from The month began with high temperatures and these contin- wind was 8.288 miles, an average hourly velocity of 11.5: second warm period set in on the 14th and continued until the 27th. the night of the 18th, during which time the hightest tempstate within a few hours.

lowest temperature which has been noted in November in quite as remarkable as the average.

several years, generally, however, November of last year gave minimum temperatures below those of the month just ended. The balancing of these extremes of temperature gave nearly the normal for the month, the departure being but 1.3° above normal; the highest recorded was 80° at Mt. Vernon and Rose Hill on the 17th day, Rose Hill also noted the same temperature on the 2d; the lowest recorded was -2° at LaHarpe on the 28th and at Scales Mound on the 30th. This gives an extreme range in temperature of 82°, while the average of the greatest daily range was 38°.

Rain periods overspread the state from the 2d to 5th, the 10th-11th, the 20th-21st and 23d to 27th. Scattered showers occurred in the intervals from the 5th to the 10th and also from the 18th to the 20th, but the amounts were small. Joining these together, however, the result would be two large rain periods, the first extending from the 2d to the 11th and the second from the 18th to the 27th. All parts of the state received ample rainfall except the northwest counties, where the amount received fell off to less than an inch; the average for the state as a whole was but 0.42 of an inch below the normal. The southern and southeast counties received the largest falls, the average for the southern section was nearly four inches. The greatest fall noted within the state was 6.92 inches at Rose Hill, and the least 0.65 at Reynolds. The greatest fall recorded in any 24 hours was 1.84 inches at Plum Hill on the 4th. The marked uniformity of the reports is noticeable.

The snowfall of the month was heavy, much heavier than usual in November. The rain period of the 4th-5th was full over the state during the fall in temperature at that time and the rain, changing to snow, deposited liberal quantities over all the north half of the state. Twelve inches fell in Kane County, and the average over the northern section was six inches; in the central section the average was nearly four inches and in the southern above one inch. It did not remain long and by the 10th the ground over the entire state was again bare and remained so to the end of the month, only a few flurries falling on the 21st and 27th.

There were nine rainy days during the month, eight clear, the normal. Maximum temperatures above 70° were com- eight partly cloudy and fourteen cloudy, which gave more temperatures below zero were not infrequent during the last the northwest, although southwest and south appear many three days of the month throughout the northern section, times in the individual reports. The total movement of the ued, with slight interruption, until the night of the 7th. A highest velocity 53 miles from the northwest at Chicago on

The atmospheric pressure of the month was quite abnoreratures of the month were generally recorded; the third and mal, averaging 30.14 inches, and over the southern and westlast warm period began on the 23d and ended with the re- ern parts of the state 30.18 inches. This is seldom equalled markable fall in temperature during the afternoon of the except during the months of January and February when 26th when changes of nearly 40° were noted over the entire the most severe weather of the year is experienced. The highest pressure reported was 30.82 inches on the 30th at Cold periods prevailed from the 8th to the 13th, from the Galva, Hannibal Keokok and St. Louis, the lowest 29,38 19th to the 22d and from the 27th to the end of the month, inches on the 26th at Dubuque. This gives an extreme the latter proving quite severe and in a few cases it gave the range of 1.44 inches in pressure during the month, and is

# CONDITION OF FARM WORK AND WINTER GRAIN

In the northern section November was exceedingly favorable for winter grain; good general rains covered all but the extreme west counties and the snowfall of the 4-5 th spread ended cold, the 28th to 30th gave temperatures 5 or 6 above from two to twelve inches of snow over the section, although zero and freezing all day. Winter wheat looks fine and it disappeared by the 10th. The general warmth, together strong; stock healthy and doing well. I look for a cold with the moisture up to the 26-27th, caused winter grain to winter. make excellent growth and it is now well prepared for the winter. Both wheat and rye are looking fine, and although unprotected at the end of the month are not thought to be condition for winter. Corn about all husked, and cribbed in excellent; stock is in good condition and farm work well in the end of the month; wheat in fine condition; water hand.

The central section also had a most favorable month; well distributed rain and light snowfall, with general warmth up 37.8°, air temperature at the same hour 31.7°; highest temto the 27th, gave excellent growth to winter grain, which is perature of the soil at that hour 54° on the 18th and 26th, lowwell rooted and stooled. Pastures have been good and stock est 22° on the 30th. A peculiar phenomenon occurred on the is generally in good condition; corn gathering and cribbing 8th and 9th; the temperature of the soil on the 8th was 34, is mostly done and the crop is large and fine. The snowfall highest air temperature during the day but 30°, which fell of the 5th gave a trace of snow in west counties which in- off to 24° during the night, nevertheless the soil temperacreased from five to eight inches in north and east counties: it ture rose to 36° at 6 a.m. on the 9th. What caused the soil disappeared quickly but it is not thought injury was caused temperature to rise? by the two to four inches of frost in the ground at the end of the month.

The southern section was favored by heavier rains than the central and northern and much good resulted to winter grain, although farm work was interrupted after the 18th. Wheat is in fine condition and well prepared for winter: corn' gathering is well along, but the crop is not nearly so large nor fine as in central and northern counties; pastures have been good and stock is doing well. The month for the state as a whole has been exceedingly favorable.

#### OBSERVERS NOTES.

Martinsville.—Wheat looking fine, corn gathering well along. J. B. Sheapley.

HAVANA.—First snow of the season on the 5th, when three inches fell. J. M. Ruggles.

ROUND GROVE.—The ground here has about eight inches of frost at the end of the mouth. R.A. Hawley.

ALEXANDER.—There seems to be at least five inches of frost in the ground at the end of the month.

Geo. H. Hall.

FRIEND GROVE.—The month has been very favorable for wheat and it looks nice; corn mostly housed, it has furned out very poor here and many farmers will have to buy feed; all stock healthy and in good condition. V. E. Majors.

Modesto.-Up to the 20th the weather was fine for cribing corn; it is good in quantity and quality, well matured, etc., gathering mostly done; wheat is well grown for the

winter and I hear of no complaint of insect injury.

ATLANTA.—The month of November came in warm and R. W. Burt.

LOAMI.—Fall pastures are very good and stock is in fine injured. Corn gathering is well along; pastures have been fine shape. There are two inches of frost on the ground at plentiful; roads in good condition. H. C. Foster.

> Aurora.-The average temperature of the soil at 6 a.m. was Chas. A. Love.

MARENGO,—Winter grain is thought to be in good conditien, but is without covering at present. Stock is in good condition and the yield of milk keeps up well: too cold for much farm work, except feeding; no snow on the ground either the 15th or 30th; soil frozen to the depth of about four inches. A very strange November, great extremes, nevertheless the mean temperature was but 0.2° above the normal and precipitation but 0.20 of an inch below. The mean temperature of the autumn was 46.2°, which is 1.8° below; total precipitation 11.60 which is 3.32 inches above normal. John West James.

## Barometer and Wind Table.

11		Barc	met	er,				Wind		
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Stations.;		ن		ني		ent	- i			
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Dubuque		30.78	30	29.38	26	4.004	5.6	22	W.	27
Galva	30+18	30.82	29	29.51	26					26
Hannibal	30.15	30.82	30	29.58	26 26	6, 938	9.6	42 36	sw.	26
Keokuk	30.15	30.82	30	29.40		17,93.7	9.0			
) inonk	30.09	30.64	30	29.54	01					
Olney	30.19	30.63	30	29.79	26					
Oswego	30-12	30.60	30	29,53	10					
Reynolds	30.12	30.79	30	29.41	26					
St, Louis	30.10	30.55	30	29.67	26	9.497	13-2	36	S.	2
Springlield	30.16	30.77	50	29.59	26	5,319	11.2	38	s.	26
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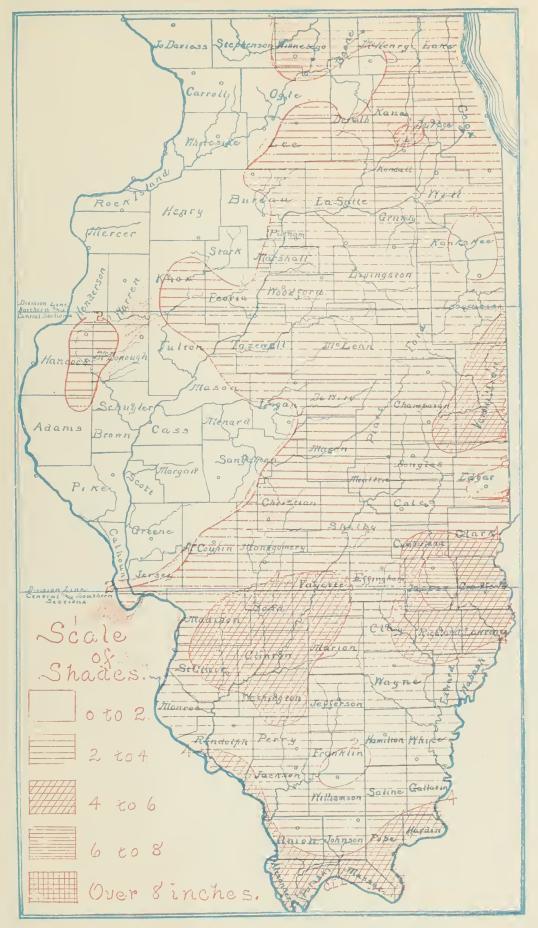
Climatological data for November, 1896.  Temperature, in degrees Fahrenheit. Precipitation, in inches. Sky. 5																				
	. 0 "e															tion	~			
Stations.	Counties.	Elevation fect.	Length of reco	Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number rainy days.	Number clear days.	Number partly cloudy days.	Number cloudy days.	Prevailing direct of wind.	Observers,
Ashton Ashton Aurora Cambridge Chemung Chicago Clear Creek Davenport. Ia Dixon Lubuque, Ia Dwight Ft. Sheridan Galva Hesp.tal Joilet Knoxville Lagrange Lammk wartinton Minonk wartinton Minonk Averages Averages Averages Averages Averages	Lee * 1. Kane Henry McHenry 1 Cook Pntnam Scott. Lee 1. I nbuque Livingston 1. Lake. Henry Kankakee Will 1. Knox * 5 Cook Carroll * 1 Iroquois Woodford Warren Ogle. Kendall * 1 Lasale 1. Rock Island McHenry Winnebago 1 Whiteside Fane * 1 Jo Daviess LaSalle De Kalb Bureau * 3 I ureau I uPage. * 3 Winnebago 1.	076 076 076 076 076 076 077 079 938 938 938	25 23 8 8	30.2 33.4 1 33.5 6 35.8 8 35.8 8 35.8 8 35.8 8 35.8 35.8 3	+1.0 -1.3 +0.2	71 70 67 70 71 72 73 73 69 69 75 74 73 70 69 67 75 74 73 70 68 69 69 69 69 69 69 69 69 69 69 69 69 69	16 16 16 16 16 16 17 17 17 10 16 16 16 16 16 17 17 17 17 17 17 17 17 17 17 17 17 17	- I 6 0 8 3 I I 3 2 0 I I I I 4 2 4 I I I I I	30 30 30 30 30 30 30 30 30 30 30 30 30 3	40 33 38 44 48 40 37 41 31 42 46 26 43  37 41 44 42 45 45 42 45 47 48 49 49 49 49 49 49 49 49 49 49 49 49 49	4.10 1.41 2.15 2.16 2.75 2.16 2.75 1.70 3.54 2.80 3.43 3.43 3.43 3.45 1.77 3.45 1.77 2.77 2.77 2.77 2.77 2.77 2.77 2.77	+2.09 -0.63 -1.33 -0.50 -0.40 +0.49 -1.35 -1.35 -1.35 -1.35 -1.35 -1.35 -1.35 -1.35 -1.35 -1.35 -1.35 -1.35 -1.35	1.12 0.40 0.86 0.57 1.30 0.29 0.74 1.72 0.69 1.72 0.64 1.00 0.10 0.45 1.00 0.11 0.30 0.45 1.00 0.30 0.55 0.71 0.67 0.71 0.67	10.0 11.2 4.0 10.1 10.1 4.2 7.0 4.5 5.8 6.5 8.5 7.0 10.5 10.0 10.5 10.0 10	100 111 6 6 144 122 6 6 6 6 9 13 8 8 8 9 9 7 7 8 8 8 8 9 9 8 8 7 7 100 100 100 100 100 100 100 100 100	77 74 45 57 74 46 69 88 99 77 71 10 88 86 65 10 38 86 66 88 10 77 11 67 7	11 10 11 15 8 8 8 7 7 4 4 4 5 5 5 10 12 7 7 16 12 14 19 9 9 5 5 4 8 8 3 4 4 10 10 10 10 10 10 10 10 10 10 10 10 10	12 13 15 20 15 18 17 18 16 16 16 19 10 12 20 16 16 16 16 16 17 15 15 15 15 15 15 15 15 17 15	W. W. W. NW. NW. NW. S. NW. SW. SW. SW. SW. NW. NW. SW. NW. NW. NW. NW. NW. NW. NW. NW. NW. N	Ira R. George, Or. M. M. Robbins, S. B. Randall, Jos. Kuhles, Central Office, @ II. K. Smirh, F. J. Walz, Eustace Shaw, L. M. Tarr. @ Prot. G. W. Horton, Post Surgeon, U. S. A. Prof. F. U. White, E. Ill. Hospital, F. M. Muhlig, C. N. Butt, Prof. F. E. Sanford M. N. Wertz, Geo. Bunker, O. M. Davison, D. J. Strang, Rev. A. P. Hatch, J. S. Seely Dr. J. O. Harris, Thos. C. Lewis, John West James, Hosmer C. Porter, R. A. Hawley, S. L. Adams, Joseph Vipond, R. Williams, Roswell Dow, W. I. Greeley, O. C. Nussle, Wm. H. Johnson, Frank Osborn, Robert McGrath,
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Note.—Unless otherwise indicated the highest, lowest and mean temperature are from maximum and minimum thermometers. \*Highest and lowest temperature from observed eadings. 1, Mean temperature from 7+2+9+9-4; 2, 8+8p-2; 3, 7a+7p-2; 4, 6a+6p-2; 5, 7a+2p+2, a, b, c, d, etc, number days missing @.U, S. Weather Bureau Stations. 'Same temperature occurred on more than one day. 'Trace in precipitation column when amount is less than 0.01 of an inch.

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NOTE: \*Indicates -1 (one below zero) \*% indicates -2, etc. + indicates - 10, +1 indicates - 11, etc.



# Daily precipitation for November, 1896.

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Oswego	****	-35	-34 -01	+50			+	+		.17								1			. 30		.02	.06	.04	.30						3.43.
Kilev		+ U.O.	- 20		.03			. 04		+ 00								T			. 27		. 02		+	.25 .						1.77
Rockford Round Grove				+	.85		+	.10		.12							1	.18			. 10 .			, 20	7	-75 ·						3.05
St. Charles		. 24	.17	.13	1.30			4	7	, 28	. 02		1					- 07		+	. 35		.02	.01	. 04	. 37 .		+				3.00
Scales Mound		. 20	. 15		1	. 06	1	-02	.03	• I 2							.02	.01,		1	.04		.031		. 04	. 32	.03 .					1.0%
Streator		.02	•31	-00	-75	+	.05	1	+	.10								.(6)		.03	.30		.01	+ 1	.01	.20 .						2.07 1.8h
Tiskilwa		. 30	+13	-19	5.5		+	+	+ .	. 02								.03			. 24		.03	.01		. 28 .						1.75
Walnut Wheaton										.02										+	. 37 .		.02	7	•35	. 24 .	+					2.05
Winnebago		. 05	. 25		I.00		*	. *	1	.05							+			1	. 25		+		.18	· 40 .						2.15
Zion		. 10	.08		62	.01				,								1							.03	. 50						0 71
CENTRAL SECTION.	, 00		2	,	103			. 02	.01				.00	.00	.00			104	.00	. 02		.00	. 04		. 0.4	- 35	. 43		.0.	•00		2.14
Alexander		0.4		-28	2.4					.01										0.0	+0			. 05	4							
Atlanta		. 27		. 38	.98					. 04										9	.22 .					.43						2.32
At wood			4.	Se	_88					. 20											. 2"			T	+	1.04						2.93.
Bloomington		. 54	-51	.22				+ 1		7		.00									. 25 .		+1	.00	+	. 27	.03 .					2.95
Carlinville				1 - 3	0,70			; .	7	.02									,	.03	.37 -			•02	. 05	.01	1 .					2.01
GarrolltonGatlin			• 10	.60	1.70			*	1	1.80	r								)		.30 .			+		.22	+ .					6.60
Charleston			-18	. 21	1.18.		OI	-4		6	161	111											7.0	- 04	. 6	26/3	0.2					2 50
Coatsburg.		.12	• 31	-54	.82	.10				. 2	16							+			-32 -		†	.07		-40 -		+ 1		•		1.52
East Peoria			4.	0.10	.04				+									1			.12 .			./4		1.32 .						3.18
Griggsville		. 25	.80	-12						1									• • • • •	-15		• • • •	. 0	- LU		.20 .			•			
Havana		.22	Υ	.65	.30					+ 1	.10									Т	.15 .		+	. 21	.01	.22	+ :					1.73
Hillsboro		+	+	-59	.61			+		.03	+							+ '		.14	.39 .			·OI	. 09	.68						2.58
Keoknk, Ia La Harpe		.03	.95				+	7		.15										73	. 24 •		. 25			.19 .						
Lexingtonn																				. 20				.06	.05	-47 -						0.75
Martinsville		.05	-25	- 35	1.00				†	1.25					• • • •		!	+	. Ic	.02	. 24 .		. 10 '			.38						
Mattoon			T	-40	-00					- 37	.05							. 05		. 26	. 06 .		. 06	.03		.83	.10 .					2.51
Morrisonville		.04	. 04	- 37	-40					.04		****	• • • •					+	'	+	.42 .	• • • •	+	.13	.07	.96 .			• • •		110	2.59.
Mt. Pulaski			†	1.00	.32		+	+		.63	.90							+	• 54		. 25:		- 30	. 29	. 02	.75	.30				,	5.30
Paris				.30	-48					.20	- 35									. 45	.21 .											1.90
Philo			.04	.18	1.24					.32											.14 .		•			.84	.05 .					3.41
Rantoul		.05	.30	.60	.64		1	†	• • • • •	. 27								7	1 +	. 05	.12		.01	· 08	+	.69	+OI	†   .		• • • • •		2.25
Springfield		. 26		47	. 52		+	+	†	.02										.01	.13			.03	.02	.42	+ .					1.58
Philo- Rantoul Robinsson Springfield Tuscola Averages		+	-15	- 33	1.20			+		32	. 05							. 05		.01	.19		†	.04	.05	.74	-05:					3.18
SOUTHERN SECTION.	.00	.08		-30	- 33	- 1		1		. 20	.05		•00	.00	.00	.00	•00	.01	.02	. 07	. 25	.00	04	, -1	.02	. 59	. 02		•00	.00	1	2.02
				87	50	- 7			-4							1	1	- 1	20					10		62						
Albion. Cairo. Carlyle.			t i	.66	. 24					-66	.67	.04							1	.05	1.10	.01	02	†	.06	. 16 1	. 00	.08 .				4.15
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The ster and a second second second second				1 +0.0	.10						. 50						'		. 09	· 10 ·					7	. 63	. 16 .					4-11
Cisne			. 05	-80	-47					.13	1.00							. 06		.07	.23 .		. 18	.05	.02	. 58	.11					3.75
Colcouds				1.09	. 26		• • • •			.28	.60	. 20						• • • •	.22	.03	.15 .	+	.06	.15	+	.05 1	-13	.08 .	•			3.89
Friends Grove Golconda Greenville	!		-45	.68	-64					. 36	.12							.02	.10	.70	.90		70 .		+ 1	. 20	.04	.20 .				5.36
Herrin				1.20	• 50																26					•46	-54	.01.				1.91
Jordans Grove			.50	.63	•33	.05			1	.84									.20		.11 .			.15		.42	11 .					3.43
Louisville			2	- 44	•58					.08	1.00							+	. 38	.07	.34 .		04	.11	-02	.40	•34 .					3.92
Mascoutali				.80	-5)					· I I	•44								.70	.19	.22 .		11	.20	.02	.08	. 10					4.20
Herrin Jordans Grove Louisville McLeanboro Mascoutah Mt Vernon Muddy Valley New Burnside					. 12					· 58								1	.18		.34 .		11	. 25		.50	.43 .					3.10
New Burnside				1.29						-51								.05	• 16	.03	-23 .		11			.84 .	. 04		• • • •	• • •   • •		3.14
Olney			-11	.50	.64					.30	.76							+	.12	.16	.18 .		11	.61	· 0.1 1	1.45	.09	+ .				5.56
Plum Hill				1.6×	. 05						.97								. 21		.34 .		30	.15	[	.46	. 13 .		.			4.15
St. Louis, Mo		10.	. 44	.05	.32		Г			·45	*10						+	1.	. 15	. ()()	.63			.08	.16	.95	.03	+ .				3.70
Muddy Valley New Burnside Olney Plum Hill St. John St. Lonis, Mo. Averages State averages	.00	4 1	- 08	-78	.43	†	+	. 66	.00	-31	.4.	.01	.00	.00	.00	.00	+	.01	. 20	.09	.31	1 .	10	-11	10.	.58	-35	-01	.00	.00		3.83
Constitution of the state of th	W()()				.,0	4 2		1	,	.12	.12	_ '	.00	.00	.00		1	.02	.00	.0,5	. 40	110	50		.03	• 49			.00			

<sup>†</sup> Trace, when precipitation is less than o.or of an inch. a.b, c, d, etc, number days missing,

REPORT FOR DECEMBER, 180%

# ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

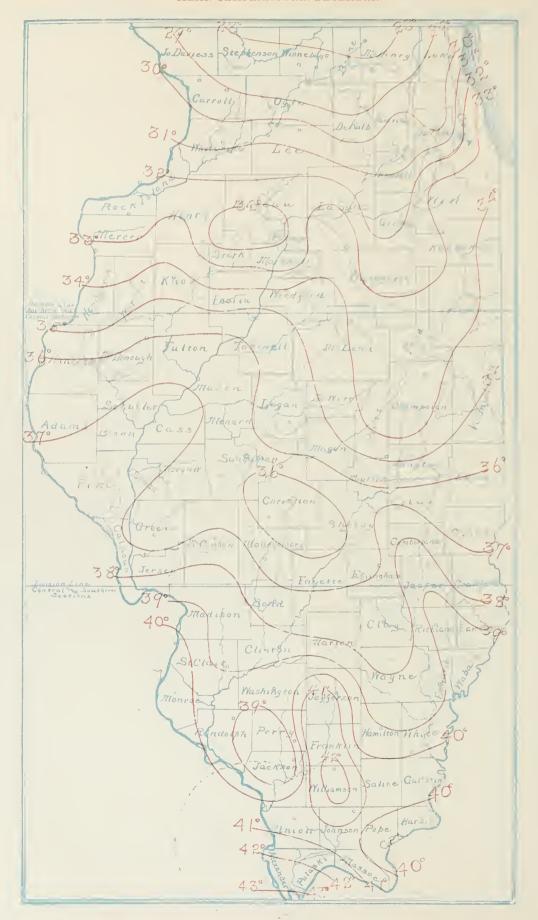
# WEATHER BUREAU.

WILLIS L. MOORE,

BY

CHARLES E. LINNEY,
OBSERVER AND SECTION DIRECTOR, CHICAGO, ILL.





U. S. DEPARTMENT OF AGRICULTURE,

OF THE

# WEATHER BUREAU.

Central Office, Washington, D. C.∫ (WILLIS L. MOORE, Chief.

## ILLINOIS SECTION. CHARLES E. LINNEY, Section Director, CHICAGO, H.L.

VOL. I.

CHICAGO, ILL.

and 17th.

Thunderstorms were observed in the southern section on the 8th and 14th.

Lunar Halos were common on the 11th, 12th, 13th, 16th and 21st; solar halos on the 2d, 3d, 25th and 28th.

30th and 31st, with light fog at a few stations on several northwest counties were also more favored than others, other days.

A aurora was seen by the Observer at Kishwankee on the 1st and others by observers in the southern section on the 3d and 23d.

on the 1st of the month, it lasted five or six seconds, and state although lightest in the southern section. The greatwas noticed at 2.19 p.m.

Our scale of shades for the rainfall chart is again too high for the deficient rainfall of this month, lines showing areas are therefore given. These progress from one-tenth of an inch to an inch and a quarter and show clearly the peculiar distribution of the precipitation.

The month of December was characterized by rather uniform warmth and exceeding drypess, having much less precipitation than any December since systematic records have been kept within the state. The lowest previous record was 0.98 of an inch in 1890, which is nearly twice that of the have exceeded the past month, although it was above the average of 43.2°.

In the general warmth of the month two marked warm periods are noticed, the first from the 9th to the 12th in-

clusive, and the second on the 30th-31st, the month ending with spring-like weather. At a few stations the last day was the warmest of the month, and its average temperature just equaled that of the 12th, 49°. The highest temperature recorded within the state during the month was 70° at Cairo on the 12th.

The month began with its most severe cold period, which was on hand also the last four days of November. This lasted until the night of the 3d. A second cool period set in on the 18th and continued, with little variation, until the 25th; the 21st and 24th both proving days with maximum = temperatures below the freezing point and minimums not No. 8. far above zero. Neither was, however, the coldest day of the month, this was the first with an average temperature of Sleet was common over the northern section on the 6th 18°, The actual lowest temperature recorded within the state was -4° at Scales Mound on the 19th. This gives an extreme range of 74° for the state, while the average of the greatest daily range was 31°.

The precipitation of the month, as previously suggested, was very deficient, averaging but 0.53 of an inch, and in the northern section but 0.43 of an inch. At a number of individual stations the fall was scarcely appreciable, and at Minonk it was but a series of traces. The eastern counties of the central section received the largest amount, being favored with a local thunderstorm condition and good Fog prevailed over the state on the 6th, 7th, 8th, 29th, showers on the 14th. The extreme southern and extreme

Rain or snow periods were over the state from the 3d to the 8th, the 17th to the 22d, and 28th to the end of the month. That of the 3d to 8th was not felt in the southern section until the night of the 7th, although snow flurries fell during the entire period over the northern section. The 17th-18th were days of general rain over the state, with flurries of snow continuing in the northern section until the An earthquake shock was noted by the Observer at Cairo night of the 23d; the final rain period was general over the est amount recorded within the state was 1.41 inches at Martinsville, the least a trace at Minonk; the greatest in any 24 hours 1.22 at St. John on the 8th. The average snowfall for the state was one inch.

There was an average of four days with rain or snow in measurable quanities, also 9, 10 and 12 respectively clear, partly cloudy and cloudy, giving about the normal sunshine. The prevailing wind direction for the month was S. with an average hourly velocity of 8.8 miles, and a maximum velocity of 47 miles from the S. at Chicago on the 25th. The prevailing direction of the wind for the month no doubt accounts for its warmth, and probably also in part for its dryness.

The barometric pressure for the state averaged 30.19 month just ended. In temperature several previous years inches which is high for the month and follows the marked high pressure average of the closing months of the year. normal 5° daily; December of '89 reached the very high The highest pressure observed was 30.81 at Galva on the 24th, the lowest 29.65 at Chicago on the 12th, which gives a range of 1.16 inches for the month, fully a third of an inch below that of the previous month.

#### CONDITION OF FARM WORK AND WINTER GRAIN.

In the Northern Section December was a very dry month, probably 1.75 inches below the normal rainfall, with comparatively warm, even temperature, averaging about 4° daily above normal. Little snow fell and what did melted quickly so that winter grain was without protection throughout the month. Rye is pronounced to be in fair condition at the end of the month, but the little wheat of the northern rain and that a light one; roads good throughout the month section was considerably injured by the freezing of the last and not a day that the farmers could not work. of November and the first of December; later dryness also added to the damage, Corn busking is finished; stock continues in fine condition owing to mild weather. The of the month; the warmest closing for December I ever ground was free from frost at the end of the month and some little plowing has being done, the subsoil, however, is very dry.

In the Central Section the month was from 4° to 5° daily above normal temperature and over two inches below the normal in rainfall, also practically without snow. Winter damaged some by the freeze at the end of November and grain was fully exposed to the severe weather of the first of this month. the month and wheat is reported to be considerably injured, sufficiently so that the latter mild weather did not cause it ing December was 31°, and of the air at the same hour 26°; to revive fully, although this was in part-due to the dryness. highest soil temperature at that hour 36° on the 31st, lowest Blue-grass and rye were not damaged as much as wheat and are reported more vigorous. Stock is in excellent condition; corn generally husked; some plowing done during the month as the frost was out of the ground most of the time: roads generally fine, although dusty.

In the Southern Section dryness added to the injury caused by the sharp weather of the first of the month and some injury to grain has resulted. The mild weather has probably the ground at the end of the month. The mean temperaovercome some of the damage, but moisture has been much needed. No snow protection was afforded the grain, but owing to the warmth little was needed. The corn crop was was 1.50 below the normal of 36 years past, and was the easily housed as work in the field was interrupted but little; smallest rainfall I have ever recorded in December. plowing continued in some parts, but dryness largely interfered; roads were dry and dusty most of the month; stock is in good condition.

The heavy rains which are appearing at the beginning of January seem to indicate full relief from the drouth, and improvement to the grain.

#### OBSERVERS NOTES.

CLEAR CREEK.—A month of beautiful weather and good roads. H. K. Smith,

GOLCONDA.—Heavy thunder and lightning on the 14th lasting from 1 a.m. to 6 a.m. James Hammons, Jr.

Oswego.—The weather of the month has been unusually fine, no storms and good roads. J. S. Seely.

ROUND GROVE.-During the 28th-29th and 30th there was very heavy continuous fog. R. A. Hawley,

HAVANA.—Very dense fog here on the 30th; month ends as mild as spring, the mercury being up to 59°.

J. M. Ruggles.

ALEXANDER, - Dust was flying here on Christmas day: the month ends warm and dry, with no frost in the ground.

KNOXVILE,-No frost in the ground at the end of the month; some of our farmers are plowing sod for next year.

Irox.—The month has been a remarkable one, only one

W. F. Hoskins.

Oregon,-There is no frost in the ground here at the end knew; many cisterns and springs are failing; stock is doing as well as in autumn.

Rose Hill.—The month was more like October than December, first three days only were wintry; wheat Isaac Kibler.

Aurora.—The mean temperature of the soil at 6 a.m. dur-22° on the 1st and 25th,

MARTINSVILLE.—The freezing weather at the beginning of the month was hard on the wheat tops, and the later warm weather has not revived them much; no protection at the end of the month; stock looking well. J. B. Sheapley.

RILEY.—No sleighing this December and but little frost in ture was 5.9° above the mean of the 35 years past, only 62 '75, '77, '81, '89, '91 and ,94 were warmer; the precipitation

John West James.

## Barometer and Wind Table,

		Bar	omet	er.		Wind.													
Stations.	Mean.	Highest.	Date,	Lowest.	Date.	Total move- ment.	Average hour- ly.	Max 3	Direction, city.	Date .									
Bloomington Cairo Chicago Davenport Dubuque Galva Hannibal Keokuk Kishwaukee Minonk Oheey Oswego Reynolds Robinson St. Lonns Springfield Rushville	30.23 30.19 30.18 30.23 30.20 30.16 30.13 30.21 30.17 30.17 30.17 30.13 30.20	30.79 30.76 30.71 30.73 30.75 30.85 30.65 30.62 30.63 30.75 30.63 30.73 30.73	24 24 24 24 24 24 24 24 24 24 24 24 24 2	29.78 29.73 29.65 29.67 29.68 29.72 29.74 29.76 29.68 29.68 29.68 29.68 29.69 29.78 29.73	22 14 12 5 12 5 12 5 12 5 12 5 22 12 12 12 12 12	6,040 11,904 5,113 2,741 6,519 5,350 7,575 6,867	8.1 16.0 6.9 3.7 8.8 7.2	26 47 25 22 28 25 25 30 26	s. s. sw. nw. sw. s.	12 25 25 24 3 3									
Averages	30.19	30.72		29.71	• • • • • • • • • • • • • • • • • • • •	6-513	8.8												

# Climatological data for December, 1896.

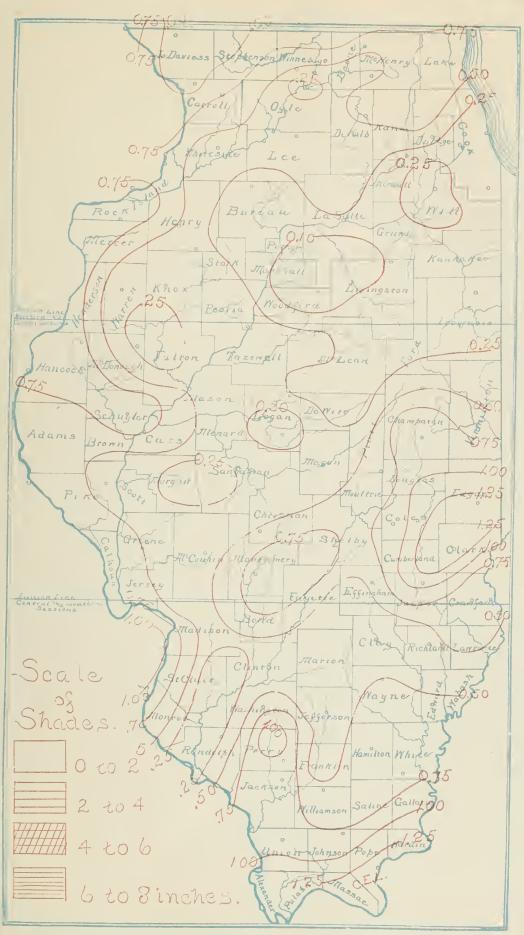
Temperature, in degrees Fahrenheit. Precipitation, in inches. Sky.																				
Stations.	Counties.	Elevation feet.	Length of recor- years.	Mean.	Departure from the normal.	Highest.		Lowest.	Date.	Greatest daily range.	Total.	Heparture from normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number rainy days.	clear	Number partly stelled cloudy days.	Number cloudy days.	Prevailing direction of wind.	Observers.
	Lee * 1. Kane. Henry. McHenry 1. Cook Putnam. Scott. Lee 1. bubuque. Livingston 1. Lake. Henry. Kankakee Will 1. Kuox * 5. Cook a. Carroll * 1. broquois Woodford Warren Ogle. Kendall * 1. LaSalle 1. Rock Island McHenry. Winnebago 1. Whiteside. Fane * 1. Jo Daviess. 1 aSalle. De Kalb Bureau * 3. 1 ureau 1. Urage. * 3. Winnebago 1.	67-0   67-0   67-0   67-0   67-0   68-4	26	30.8 32.2 32.8 30.5 5 31.6 6 32.0 32.0 33.3 33.3 32.0 32.0 32.0 32.0	+5.6 +5.0 +3.0 +4.6 +4.7  +0.9 +5.7 +5.9	67 54	12 12 11 11 12 31 11 12 13 11 12 12 13 11 12 12 11 11 12 12 11 11 12 12 11 11	6 4 4 0 1 1 8 6 8 8 4 6 1 5 5 4 10 8 4 6 1 7 5 3 3 5 4 4 5 5 5 5 3 3 8 5 4 8 3 7 6 9 0 3 5 5	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	28 22 33 32 33 32 77 29 28 33 34 33 44 33 34 35 24 24 33 34 35 24 24 35 36 24 24 35 36 24 28 38 38 38 38 38 38 38 38 38 38 38 38 38	0.32	-1.50 -2.10 -1.04 -1.10 -1.37 -1.43 -1.98 -2.13 -0.97 -1.50 -1.34 -1.70 -2.05	0.09 0.34 0.18 0.06 0.12 0.36 0.06 0.30 0.06 0.07 0.32 0.05 0.17 0.25 0.30 0.21 0.05 0.17 0.25 0.20 0.07 0.10 0.25 0.25 0.20 0.45 0.25 0.20 0.45 0.25 0.20 0.45 0.25 0.20 0.45 0.25 0.20 0.45 0.25 0.20 0.45 0.25 0.20 0.45 0.25 0.20 0.45 0.25 0.20 0.45 0.25 0.20 0.45 0.25 0.20 0.45 0.25 0.20 0.45 0.25 0.20 0.45 0.25 0.20 0.45 0.25 0.20 0.45 0.25 0.20 0.45 0.25 0.20 0.45 0.25 0.25 0.20 0.45 0.25 0.20 0.45 0.25 0.20 0.25 0.25 0.25 0.20 0.25 0.25	3.6 2.0 3.5 5.0 1.3 4 2.5 3.8 5.9 4 5.3 2.5 3.8 4 0.4 0.8 4 4 0.4 0.3 3.5 3.5 5.0 0.7 7 0.4 0.1 0.3 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2	66 7 4 7 7 5 1 1 7 7 8 9 2 2 9 4 4 4 6 6 4 2 2 5 5 5 0 0 2 2 3 3 3 6 6 6 7 7 7 5 6 6 6 6 7 4 8 8 4 4 2 2 5 5 4 6 6 5 5	57 73 55 58 75 76 66 10 10 75 11 11 58 66 66 33 13 13 13 19 77 77 10 10 10 10 10 10 10 10 10 10 10 10 10	14 13 16 4 10 10 10 8 3 3 17 10 6 6 10 5 12 10 14 12 10 14 17 7 7 7 8 8 11 10 10 10 10 10 10 10 10 10 10 10 10	12 11 12 22 17 14 16 15 21 19 9 14 15 16 18 10 16 17 17 17 17 17 17 17 17 17 17 17 17 17	8W. W. W. S. S. W. S.	Wm. H. Johnson. Frank Osborn. Robert McGrath.
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Note,—Unless otherwise indicated the highest, lowest and mean temperature are from maximum and minimum thermometers. \*Highest and lowest temperature from observed readings. 1. Mean temperature from 7+2+9+9+4; 2. 8+8p+2; 3. 7a+7p+2; 4. 6a+6p+2; 5. 7a+2p+2, a. b. c. d. etc. number days missing a, 1, 8 weather Burean Stations. \*Same temperature occurred on more than one day. \*Trace in precipitation column when amount is less than 0.01 of an inch.

Maximum and minimum temperatures for December, 1896.

# NOTE: \*1 Indicates -1 (one below zero) \*2 indicates -2, etc; + indicates -10, +1 indicates -11, etc.

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# Daily precipitation for December, 1896.

DAY OF MONTH.

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Loami								.40						.01			.04	.05										+	.02	.03 •	•••	0.22
Mattoon								- 51						.03			.10											.02			. 22	0.88
Mt. Pulaski	)							.32									.03	.05			)							+	.08	.03 .		0.51
Peoria								.10										.07				+						.01	.02 .		. 20	0.40
Philo Rantoul Robinson Rose Hill			+	1				•08						10.		• • •	.09	+	+	+	+	+	+					.01	+	+	.11	0.30
Rose Hill							+1	·45						.12			+	.11											+	+ .		0.68
Springfield			• • • •		٠		'	. 14									.04	.08	+			·						.01	10.	.03	+	n.31
Rose Hill. Springfield. Tuscola. Averages	.00	.00	†	.01	1	†	7	.20	T	.00	.00	.00	.00	.06	†	+	.10	. 06	+	+	+	+	+	.00	.00	.00	.00	-03	.02	-01	.07	0.56
SOUTHERN SECTION.						1											- 0															
Albion Cairo Cisne Cobden Friends Grove Golconda Greenvil le Hallidayboro Herrin					• • • • •			. 38										.06						.08	• • • • •				.04	•••1.		0.46
Cisne								.32									.66														-05	0.43
Friends Grove								.49									+ 68	.03											+	:::W.	. 05	0.89
Golconda								.78						.40			.03	. 05				, -							+		.03	1.29
Hallidayboro							• 33	.32																				.12 .			.12	0.89
Herrin Tron								.07																					.10 .			0.46
Londons Choro																													06		0.00	0.22
Louisville								.62						+			.02	†											.65	.01 .		0.70
Mascoutah Mt. Vernon New Burnside Olney								. 68									•10								• • • •			.10 .	+		.11	0.10
New Burnside							†	.59		• • • •				.02			.07							†				+	+ .		+	0.68
Plum Hill								+18									.05											. 10 .			.12	0.45
St. Loris Mo					• • • •		· · · · · · ·	.22						1			.09	+		• • • •								†	+ 03		.07	1-31
New Burnside Olney Plum Hill St. John St. Lonis, Mo. Averages, State averages,	.00	+	.00	.00	.00	.00	.02	•44	100	.00	,00	.00	.00	•04	+	.00	.03	.02	.00	.00	.00	.00	.00	+	.00	.00	•00	10.	.02	+	.03	0.60
State averages	†	1	•03	.02	3	.01	T	. 10	†	.00	.00	• 00	1	.03	+	1	•10	.03	1	+	1	Ť	+	+ )	.00	1	•00	.03	. 02	.01	-00	0.53
			+ 125	*****	welve	·11 - 11 ·	a sini	tati	on i	2 100	z +1ra	11.0.6	· . F	211				.,	h a	A .	ata 1	nunt	OF C	dave	mies	ince						

<sup>†</sup> Trace, when pre dipitation is less than o.or of an inch.

a. b, c, d, etc, number days missing.

U. S. DEPARTMENT OF AGRICULTURE.

ANNUAL SUMMARY, 1896.

### ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

## WEATHER BUREAU.

PREPARED UNDER THE DIRECTION OF

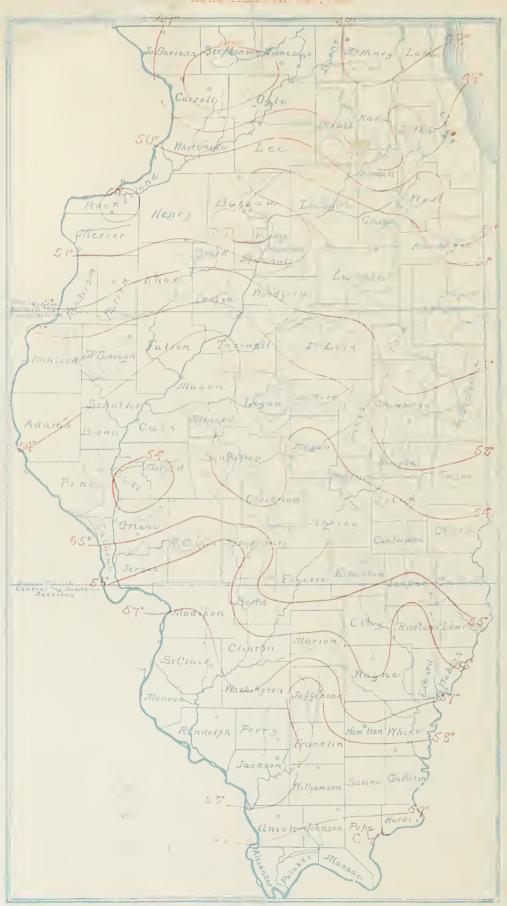
WILLIS L. MOORE,

BY

CHARLES E. LINNEY,

OBSERVER AND SECTION DIRECTOR, CHICAGO, ILL.





U. S. DEPARTMENT OF AGRICULTURE,

## CROP

### WEATHER BUREAU.

Central Office, Washington, D. C. WILLIS L. MOORE, Chief.

ILLINOIS SECTION, CHARLES E. LINNEY, Section Director, CHICAGO, ILL.

Vol. I.

CHICAGO, ILL.

more than 6° daily above the normal, the winter proving a gradual increase in rainfall has been followed by a marked mild one. The first spring month, however, was uniformily increase in crop production. The greatest fall within the cool, but April and May fully made up the deficiency and state was 50.45 inches at LaHarpe, and the least 27.36 at placed a considerable balance on the excess of temperature Sycamore. The local character of the rainfall throughout side: June, August, November and December were all above the year is very noticeable, places in close proximity having the normal. May was the month of greatest excess in heat, widely different amounts. July was the month of highest averaging nearly 8° daily above normal, while October was records, several stations reporting more than 10 inches of the month of greatest deficiency, averaging nearly 3° daily rainfall, most of which fell in two brief storms. below. The year as a whole shows an average daily excess of 1.9°.

20th of February, when a minimum temperature of 18° below December was the cause of the slight deficiency. zero was recorded at Ashton, and the average minimum temperature for the state was 3° below zero; this, however, just there were 131 clear days, the same number which were partequals the average minimum temperature of the state on the ly overcast and 104 which were wholly cloudy; precipitation 4th of January, when slightly colder weather than during measurable quantities was recorded on 92 days, which is 10 February, flowed over the southern section.

The heat periods of the year were not as numerous nor as trying as those of the previous year; May, June, July and total movement of 86,476 miles, an average hourly velo-August were warm months and each had a heat period of city of 9.8 miles, which is considerably lower than that of some note, but as a whole they were much more temperate the previous year. The highest velocity recorded during than in the year '95. The heat period of May came early in the year was 80 miles per hour at St. Louis during the tornathe month and very early in the year for such high tempera- do on the afternoon of the 27th of May. tures, as maximums above 90° were common and a temperature of 98° was recorded. June had a number of warm which was also the average of '94 and '95. November and periods but none so marked nor trying as those of July and December were months of high pressure, these two August. The former month had four periods of great heat months proving marked exceptions to the usual pressure at when temperatures above 100° were recorded at a number of the last of the year. May was the only month with noticestations, and the average highest temperature for the state able low pressure. The highest recorded was 30.82 inches on reached 97°. August had but one marked heat period which the 30th of November at Galva, Hannibal, Keokuk and St. began on the 4th and continued to the evening of the 11th, Louis; the lowest 29.25 inches at Davenport on the 28th of when again temperatures above 100° were recorded at a March. The year as a whole was a fruitfull one and shows number of stations, and a maximum for the year of 108° the marked advantages which accrue to agriculture when cliwas recorded at Mascoutah on the 7th. The record for the matic conditions are nearly normal. vear is one degree higher than that of '95 and a degree lower than '94. The extreme range of temperature for the year was 126°.

although the central and northern sections had frosts on the of fog and May of disastrous storms. Many lives were lost 8th to 10th and finally the northern section the last frost of through storms and lightning.

the spring on the 22d. Following which the state was free from frost until the 20th of September when killing frost appeared in northern counties; a second came on the 23d and the third and general one on the 17th to 19th of October. The state therefore was free from frost for six month.

The precipitation for the year, considering the state as a whole, was only slightly deficient, although the southern section did not receive nearly its normal amount, and in fact experienced a drouth condition during several months of the year May, July and September were months of large rainfall that of July and September proving in excess of any previous record for these months. January, October and December No. 9. were months of marked deficiency, the latter proving an exceptionally dry month. The year shows 4.70 inches greater The year 1896 began with temperatures averaging slightly precipitation than '95, and 7.31 inches greater than '94; this

The snowfall of the year was slightly below the normal, averaging 21.8 inches, although the northern section receiv-The greatest cold of the year probably occurred on the ed 31.6 inches. The lack of good snowfall in January and

> The sunshine of the year was nearly the normal amount, greater than '95.

> The prevailing wind direction for the year was S., with a

The average air pressure for the year was 30.05 inches,

A large amount of miscellauous data has been gathered by our observers during the year. From which it appears Frosts in the spring were common until the 3-4th of April that June was the month of greatest thunderstorm frewhen the last severe and general frost of the spring occurred, quency, March of most frequent auroral display. December

#### CROP SF'

The crop season of the warm wave which ing the coming year for similar use. overspread ... last week of March, The on rather a mild one and winter grain every effort to have complete and reliable data for every day wheat area of the southern section suffered from drouth at seeding time and was further injured by a dry winter; freezing and thawing, with light snow protection, also compelled to give rather broken records. A partial record is caused some damage throughout the state.

Farm work became general with the warm weather the should strive for, last of March and was without serious interruption during the middle of April, and gardens and potatoes were planted. setting fruit.

week in June, also rye in a few central and northern coun-signal. This will give the prominence to the cold wave in the shock by the end of the month with oats harvest be- follow the suggestion. ginning. Field work with small grain was practically finished by the end of July, and much threshing had been done,

Corn cutting began early and was general by the 20th to 24th of August; broom corn harvest being generally finished except in Henry County. Fall plowing was begun early but was interrupted somewhat by dryness, especially in the southern section. Seeding was also delayed by the dryness and fears of harm by bugs and the hessian fly, still most of the crop was in the ground by the end of the first week of October.

Pastures throughout the season were generally good, fruits abundant. The season as a whole was highly favorable and good crops were generally produced. It was remarkable early, after the heat period of the middle of April, and small grain was harvested ten days to two weeks earlier than usual; corn cutting also began fully as far ahead of the usual season. Frosts in the spring were lacking, while in the fall the advanced condition of crops caused the frosts of September to do little or no damage. The daily temperature average was 1,6° above, and rainfall 3.71 inches above the normal season.

#### NOTES AND COMMENTS.

The large number of stations which appear with full yearly data is an excellent comment on the good work + ing done by our observers.

At a few of the stations which were lacking in small portions of their data, estimated data are given. These will be easily recognized by the marking.

A number of the stations in the tables on pages 6, 7 and 8, marked as having observed readings, were supplied with self-registering thermometers during the year; the same remark applies also to page 5.

The departures given on pages 6 and 9 are from normals secured from data covering periods of 8 to 36 years; the least is an 8 year normal and the majority are for periods of

10 to 15 years. Many other stations will be computed dur-

During the coming year obervers are urged to put forth the season in fair condition; the large win- in the year. A large majority now make this excellent showing and great credit is due them for it, but we have a few, who, for reasons which are no doubt good, have been far ahead of none, but full data for every day are what all

The Chief of the Bureau has recently issued revised inthe crop season. Oats sowing was practically completed by structions regarding the display of the cold wave signal, in which it is suggested that hereafter when cold wave signals Corn planting was well in hand by the end of the month, are ordered, or when the regular forecast contains warning of and the fruit trees of the state were ladened with blooms or a cold wave, the cold wave signal be displayed alone, and in no case should flags representing the weather element of the Wheat cutting began in the southern counties the first forecast be displayed from the same staff with the cold wave ties. Work progressed favorable and the crop was generally warning which it merits and we hope all displaymen will

> Scales Mound, -Another year has gone and during my residence here (since 1843) I have never seen our land washed so badly as during the year just ended.

> > Joseph Vipond.

RILEY.—The mean temperature of the year was 47.6°. which is 2.2° above the normal, 1870, 78, and 94 were warmer. The total precipitation was 32.52 inches, which is 1.01 inches below normal. John West James.

WINNEBAGO.—This year ends with a dry subsoil, the ground being wet about one foot in depth. Most of the rainfall occurred in too short a space of time, much of it running off. Crops were up to the average, and farmers for the most part are rosperous. Frank Osborn.

Barometer and Wind Table.

	В	arometer,				Win	d.	
Stations.	Mean. Highest.	Date, Lowest.	Date.	Total move- ment.	Average bour- ly.	Mailes.	Direc- tion,	o velo-
Bloomington (Cairo Chicago Davenport Dubuque Galva Hannibal Keokuk Kishwaukee Minonk Oswego Reynolds Reynolds Rebinson St. Louis Springfield Rushville	30.79 30.06 30.80 30.05 30.71 30.03 30.77 30.02 30.78 30.08 30.82 30.05 30.82 30.05 30.65 30.67 30.63 30.67 30.63 30.67 30.63 30.67 30.63 30.77 30.63 30.77	Dec 24 29,33 Jan 4 29,54 Dec 24 29,37 Nov 30 29,25 Nov 30 29,25 Nov 30 29,35 Nov 30 29,35 Dec 24 29,56 Nov 30 29,40 Lec 24 29,57 Nov 30 29,40 Lec 24 29,37 Nov 30 29,40 Lec 24 29,37 Nov 30 29,30 Jan 4 29,47 Nov 3 29,30 Nov 30 29,30 Jan 4 29,47 Nov 3 29,30 Nov 30 29,30	Mar 28 Jan 21 War 28 War 28 War 28 War 28 War 28 War 28 eb 0 Var 28 Var	73,035 149,231 50,408 8:.139 68,981 91,741 84,252		8 i 44	nw. sw. nw.	May 26 May 27 May 16 Apr 13 Jul 32 May 27 Apr 13
Averages	30.05 3.82	Nov 30 29.25	Mar 2	86.476	9.8	8,	nw.	31ay 27

a, b, c, etc., months missing.

ological data for the year 1893.

2-						Jiogi	car as	ata for t	the ye	ear 183	53.									
						egrees 1	's bren	heit).		Pre	e <b>ci</b> pitat	ion (in	ches).					Sky.		n of
			)I.c			Winds	2		ord,	year.	nthiy.		-			lays.	ear	t i y	ondy	c direction wind.
Stations.	Counties.	feet.	reeore	теап.					ree.	the y	rac n†1						0	17.	noi	dir.
		evation,	h of year	n la	st.		ř.		h of year	for t			mon		J,			-	(3)	
		leva	l.ength	Annual	Ilighest	Date.	Lowest	Date.	Lengt	Total	Greatest	Month.	Least m	Month	Total	Numi	u r.	n .		
		===			-=	D	7		, A		2	M	i	X	F	Z -	Z	Z	Ž	
Ashton	Lee*1	830		40.	97	Aug. 4	-18	Leb. no		33.32	6. (.	Sep	0.37	Dec	35.1	110	129	159	78	sw.
Anrora Cambridge	Kane1	67 82.		50.7	97	July 14 uly 14	-13 - 5	<sup>†</sup> eb. ≏o Teb. 2o†		39.25	7.0	Sep July	0.32	l ec	39.0 26.5	1 /3 78	120 88	142	104	W. HW.
Chemnig	McHenry Dook Putnam	824	26	9.8	98	Aug. 5	-15 - 9 -10	Jeb. 21 Jeb. 20†	26	35.14 38.81	9.6	tep tep duly	0.77 0.16 0.08	Lec Lec	51.9 47.2 17.0	112 114 74	163 136 92	136 156	176 94 118	8. 8. 8W.
Davenport, Ia, Dixon	Scott Lee	613	25	50.8	95 95 97	Aug. 4 Aug. 4	- 8	Feb. 19 Feb. 21	25	28.68	5.65	o uly May	0.65	Dec 1 ec	24.8	115	97	128	141	sw.
I nbnque, Ia Ft. Sheridan	Lake	651 693		‡ <sub>18.2</sub>	9.) 95	Aug. 4	-10 -11	Jan. 4 Feb. 20	8	42.29 2,.2'	5.00	Apr Sep	0.71	J ec Jan	26.5	127	99	14,3	124	s. nw.
Galva Hospital Joliet	Kankakee Will	050		49.8	97 88 100	Aug. 4 July 14† Aug. 8	-10 - 6 - 6	Jan. 4† Feb. 20		3 · 19 ‡37 · 44	9. °° 7.31 6.69	July July Sep	0.17	Dec Dec	34.3	92	1:4 12.4 160	163 64	89 68	nw. s. sw.
Knoxville	Knox*5 Cook	775		52.2	96 98	Aug. 4†	- 8	Feb. 20 Feb. 21 Feb. 20		3··9·1 37·76 ‡33·67	7.25 5.39	July	0.36	Dec	33.1 26.6 29.3	72 82	85 175	93 117 98	113 164 93	s. sw.
Lanark	Carroll*1	632		\$51.8	97 98	Aug. 41	- 9	Feb. 21 Jan. 4†		3.5.13 ‡ 32.20	7.92	May	0 13	Jan 1 ec	26.5	101	125	181	60 97	sw.
Minouk	Woodford #1 Warren Ogle	78.4	1,5	51.2	9:	Aug. 8 Aug. 4 <sup>†</sup> Aug. 8		Feb. 20 Jan. 4 <sup>†</sup>	15	37.35	5.50	Vay Ang		1 ee 1 ee	25.0	98	83 123	211 187 166	72 56 t 1	nw. sw. nw.
Oregon Oswego Ottawa	Kendall*1 LaSalle1	650 500	16		97 98 100	Aug. 8	-15 -14 - 9	Feb. 21 Feb. 20 Feb. 20	16	20.33 .8.47 38.50	5.61 7.52 0.38	∴ep   May Een	0.30	Dec	36.4	78 91 113	139 137 117	169	120 1 · 2	nw. sw.
Reynolus	Rock Island	850 956	30	49.9	94 95	July 141 July 141	S I ,	Jan. 4 Feb. 20		31.48	6.cg 9.45	July Fep	0.65	Nov	22.9 32.1	108 114	1.18 71	119	.99 139	s. sw
Rockford	Kane		23	19.3	96 100	Aug. 5 ouly 13†	-:c -1., -10	Jan. 4 <sup>†</sup> Feb. 21		39.29	8.33	Sep   Sep   Nay	0.40	Cet Cet Jan	41.4 28.6	101	176	59 142	131	w .
Streator	i aSalle		15		98 96 96	Aug. 8	- 8 -12	Jan. 4 Jan. 4 Feb. 20		39·73 27·91 27·36	7.97 5.98 8.39		0.05	Oct Oct	21.5 34.0	97 96	50 148 128	189   146 141	72 97	s. s. w.
Tiskilwa Walnut	Bureau *3	798		48.7	96 97	ouly 14t	- 8 -10	Jan. 4 l eb. 20		33. 04 35 · 37	6.70	Sen! July	0.7	1 ec	32.5	1C3 97	143	134 145	87	sw. se.
Wheaton	Warnebago . 1	900	s	48.4	96	July 14	- 8 -13	Jan. 4† Feb. 21	8	41.47 32.53	9.c9 6.50	May	0.53	Oct Dec Nov	53.6	87	160	199	87 80	11 W .
	Carron			47.9	1)0	· (ly 13†	-13	Jan. 4		35.91	8,35	May	0.71		20.6 31.6	· 85 97	171	83 137	104	w.
CENTRAL SECTION.  Alexander	Morgan				1(0	Aug. 6	2	Jan. 4	ļ	32, 26	7.50	July		Dec	20.2	97	79	222	65	nw.
AtwoodBloomingtonBushnell	McLean	853	11	52.7	104 99	July 28. May. 8.	-10 - 8 - 6	Jan. 4 Feb. 19	11	38.66	6.79		0.6	Pec	29.2	98 98	97	137	169   126	s. sw.
Carlinville	McCoupin	663		55.1	100	Aug. 8 Aug. 8 Aug. 6	2	Feb. 20 Jan. 4† Jan. 4		35.48 41.56 32.38	8.34 8.11 6.91	Yay May	0.43	l ec l ec	25.3 15.0 16.0	71 103 80	139 169 81	13t 86 177	163 168	se.
Charleston Decatur	Coles	720 685		53 7 54.2	97 96	Ang. 6 Aug. 8	- 3 - 3	Feb. 20 Jan. 4		45.83 35.31	7.12	July	0.49	Oct Lec	18.6	117 102	140 183	125 94	101 89	s. nw.
East lec ria Effingham Griggsville	Effungham	470 69 )		51.3	100	Aug. 6 Aug. 8	- 9	Feb. 21 Jan. 4			7.97 5.40		0.27	1 ec	15.0	76	77	110	179  83	se.
Hannil al, Mo Havana	Marion	534		54.1	97 100 96	Aug. 8 Aug. 8 Aug. 4	- 1	Jan. 4† Feb. 2)	5	42.43 35.23 3 <sup>†</sup> .31	9.32 9.14 5.30		0.65	l ec l ec	15.8	71 113 97	131 146 169	114	106 70	sw.
Hillsberg Keokuk, Ia	Montgomery *1	676 6:3	25	56.3	101	Aug. 8 Aug. 8	- 8 - 8	Jan. 4 Feb. 20	2,5	32.25 36.77	6.62 9.44	May Sep	0.73	Jan Lec	16.5	102	115	167	84 167	se. sw.
La Harpe Lexington Martins ville	Mc. ean	800			96	Aug. 8 Aug. 61 Aug. 7	-10 - 9 - 2	Feb. 20 Feb. 21 Feb. 20			7. ·8 10.57	Fep   July July	0.99	l ec Jan	23.3	87 73 83	147 120	210 75 92	50 6 124	sw. sw. nw.
Mattoon	Coles	714		55-5	97 102 95	Aug. 6 Aug. 7	5	Jan. 4 Feb. 21			10.47	anly July	0.49	Oct Jan	10.5	162	126	95	100	sw.
Mt. Pulaski Palestine	Crawford	500		53.6	97 97	Aug. 8 Zug. 6t		Jan. 4 Feb. 20		41.68	8.14 7.75	July	0.54	Oct Pec	21.5	86 98	153	152 154	61 96	se. nw.
Paris Peoria Philo	Elgar Peoria Champaign			54-5	105	July 29 Aug. 5 Aug. 5t	- 4 - 4 - 8	Feb. 20 Jan. 4 Jan. 4		36.14 35.36	8.39 7.02 7.27	July July July	0.23	Oct Oct	20.5	89 69	119	137 157	110	s. nw.
Rantoul	Champaign*1 Crawford .*6	768		51.8	97 100 97	Aug. 6 Aug. 6		Jan. 4 Feb. 20		33.01	6.86	July	0.22	Oct Dec	25. I 11. 0	104	160	90	116	sw.
Rose Hill	Jasper*1	679 669		51-0	102 99	Aug. 6 Aug. 8	- 3	Feb. 2) Jan. 3		37.36	7.82 9.61	uly uly	0.67	Dec	23.5	76	111	190	65 131	sw.
Springfield Tuscola	Sangamon bouglas		16	52.4	99	Aug. 8 Aug. 6	- 4 - 5	Jan. 3 Jan. 4		35.73 35.11 36.53	8.51 6.85	July		1'ec Oct	13.4 17.3 18.2	108 89	103 168 128	134 154 131	129 104 167	n. nw.
SOUTH SECTION.					7									P :						
Albion	Alexander	531 359	26	56.5	99	Aug. 114 July 30 June 184	8	Jan. 4⁴ Jan. 4 Jan. 4⁴	26	46.58 30.32 42.90	13.21 10.82 8.29	May Jul	0.46	Lec Lec	2.2	64 111 82	187 99 162	80 152 107	99 · 115 97	s.
Cisne	Union	616 656 580		0 / - 2	98 102 101	Aug. 61		Feb. 20 Feb. 20		‡39.81	9.30 8.67	May May	0.89	Гес Гес		95 89	118	156	82 79	s. s.
Golconda	Pope	500 635		55.0	103	Aug. 15 Aug. 5	9 2	Jan. 4 Jan. 4	18	12.36	7.28	May	0.82	T'ee	17.8	92	116	127	123	nw.
Ferrin	Williamson r White	456 436		. 58.0	106	Aug. 6:		Jan. 4 Jan. 4		28.52 38.11 38.31	5.60 7.12 8.56	May May May	0.46	l ec Dec I ec	16.0 12.5 22.4	50 98	154 129 95	122 141 1,2	90 96 99	SW.
dordans Grove Lonisville McLeanboro	tay	510 480 462	9 27 14	57·7 55·5 56.2	98 96 102	Aug. 6	1	Feb. 20	27	34.69	6.26	July May	0.31	Dec Dec	17.7	102	140 41	125 238	101 87	s. sw.
Mascoutali	St lair*5 Jefferson	571 511		. 57.9 . 58.5	108 99	Aug. 7 July 30	6	Jan. 4t		41.21	9.70 7.64	May May	0.10	Dec Lec	11.6	87 70	71	119	146 81	S.
Muddy Valley New Burnside	Johnson	400 7.0		58.8	104	July 30	4	Jan. 4 Jan. 4 Jan.		36.68 39.63 39.66	7.05 9.44 8.67		0.80	Pec Pec Pec		76 89 99	163 115 122	1109	161 142 111	8W.
Olney I lum Hill St. John	Washington*	487 500 450			100 104 100	Aug. 8	8		10	38.72	6.96 9.45	May May	0.44	Aug	20.8	77 77	143	107	79 100	nw. sw.
St. Louis, Mo	St. Louis		25	57·9 : 7·2	100	Aug. 8	5	Jan. 4	26	37.55 30.68	9.12	Мау	1.05	1 ec	10.4 13.0	120 86	150	113	103	s. s.
										36.69					21.8	92	131	131	104	s.

Note: Unless otherwise indicated the highest, I west and mean temperatures are from maximum and minimum thermometers. \*lighest and lowest temperature are more served reagons. 1. Mean temperature from 7+2+9+9+4; 2. 8a+8p+2; 3. 7a+7p+2; 4. 6a+6p+2; 5. 7a+2p+2. ‡1 artially estimated reports. Lefting for sky incomplete.  $^48am$  (emperature occurre) on more than one day.

	Mon	thly and	annual n	nean tem	perature i	for the y	ear 1	6						e n	orm:	al		-		
	January.	February	. March.	April.	May.	June		,			epte:	inber	Octo	ber.	Nove	mber	Decen	aber	Ann	ual.
The same of the sa	÷	ure.	· ·	1		4	T		2		rē.		re. –		2		re.		9	_
Stations.	ture.	1 5	,	od .	<del>-</del>	era	eratu	ture.	Temperature	ture.	Temperature	ture.	Temperature	ture.	rature	ture.	Pemperature	ture.	Temperature	ture.
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Ashton*1 Aurora	26.3 + 8.7	24.4 + 2	. 31.0 - 3.2	53.6 + 5.8	66.0 + 6.0	68.2 - 1	.0, 7 7	- 2.7	72.0	+ 0.3	639. M	5.0	46.2	5.8	36.2	- 0.1	30.5	+ 5.6	48.8	+ 1.1
Chicago	21.3	26.6 - 1.	29.2	53.4 + 3.6	65.5 + 9.0	60.8 + 0.	. 71.2	0,0	71.8	8.1 +	58.4	2.0	44.2	2.7	35.1	0.2	31.1	+ 3.0	49.8	+ 1.0
Clear Creek	26.6 + 7.5 25.8	74.2	33.8	55.4	67.8	69.8	73.2		7 .9		59.4		47 - 1		35.6 35.8 35.5	- 1.2	32.2 ·	+ 4.6	5 . 4	+ 1.6
Dubuque, Ia Ft. Sheridan Galva	25.0	27.1	. 31.9	54.8 + 6.3	68.6 + 9.1 64.2	71.0 + 2	73.3	- 1.0	72.6	+ 2.0	59.6	3-4	46.6	- 2.6	37.5	- 4 2	3 . 5 4	+ 4.7	9.7 4×.2 50.5	+ 2.2
Holpita†	28.4	27.4	31.8	55.8	68.3	69.2	7 -1		71.6		58.8	::	4 <sup>h</sup> ·4 :7·8 4 <sup>r</sup> ·6		37.0		33.3		49 * 5 7	
Knoxville*5 La range*1	28.6 +11.8	25.6	34.6 + 0.4	58.2 + 7.1	7 .7 + 9.1	72.0 + 0. 66.8	.8 75.c		73.8	+ 1.	62.2 ·	- 0.5	5	+ .2	37·2 37.8	+ .3	34.1 4	+ 9		
Martinton*1	28.3	30.2	31.3	\$ 6.2 55.8	68.5	71.0	74.0 73.8		73.6 73.9		62.2		49+) 49+1 +		39.8		31·1 33·9 ·			
Monmouth Oregon*1	26.2	21.2	. 30.5	54-8	66.7	69.0	73.0		72.0		59 - 4		46.4		34.6				48.5	:
OttawaI Reynolds Ritey	27.8 + 9.9 $26.4 + 6.6$	27.3 + 4.5 20.6 + 0.5	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	56.6 + 7.7 57.c + 7.5	68.9 + 8.4 $67.6 + 6.4$	69.0 - 1	.2 74.8	- 0.5 - 2.1	73.8	+ 4.2 - 1.0	60.0	+ 0.5	48.0 -	$\frac{-1.0}{-3.8}$	38.3 36.0	+ 1.0	33.4 = 32.2 =	+ 0.9	51.3	+ 2.2 + 0.7
Rockford 1 Round Grove	25.8	24.6	. 30.6	54-4	70.0	71.4	75.8		75.0		6:.9		51.4		36.8		30. h .		54.7	
Scales Mound Streator	25. 2	25.2	31.4	57-4	68.8	71.8	· 72.0		70.9		58.5		50.6		32.8		28.7 · 34.2 ·		45.4 51.9	
Syeamore*1 Tiskilwa*3 Walnut	25.8	24.4	31.2	51.2	68.5	70.0	73.6		71.0		58.0		50.0		33.7		30.0 .		48.7 51.3	
Wheaton*3 WinnebagoI Zion	24.6	23.9	. 30.7	53.6	66.1	68.6	72.4		71.6		58.4		46.0		34.8		30. I .		45.4	
Averages	26.3	25.6	. 31.9	55-3	67.2	69.5	73.3		71.8		59-8		47 • 61 •		35.9		31.3		49.6	
Alexander*3	27. 1	28.2	32.4	55.8	66, 2	68.3	71.0		72.2		65.1		46.2		39.2		31.7		49.9	
BloomingtonBushuell	29.6	33.3	36.2	59.8	71.6	73.8	75.4		76.8		61.4		51.4		38.8		35.2		53.3	
CarrolltonCatlinCharleston	30.9	31.7	35.5	57.3	70.5	71.6	77.1		72.8		64.0		50.7		43.6		36.8		53.7	
Coatsburg Decatur East Peoria	28.4	30.2	34.6	61.2	70.9	72.8	75.5		74.9		57·4 65.2		51.8		40.2		35.4 .		54.2	
Hannibal, Mo	31.8	32.4	38.0	61.4	71.0	72.0	·· 76.9		75.8 75.5		‡54.5 63.2		53.0	:	42.4		37.6 •		54.8	
Havana	33.5 + 8.0	31.8	39.6	63.8	72.3	71.8 + 1.	78.3	0.1	77.8	+ 2.0	66.9	- 2.9	53.7	- 2.0	43.8 38.2	- 3.0	35.0	+ 6.0	56.3	+ 1.9
LaHarpe1LexingtonMartinsville	27.3 + 4.7 27.0 30.6	28.0 — 1.3 27.6 32.8	33.4	59.0 + 7.4	69.2 + 6.0	72.2 + 0 69.9 · · · ·	· 77·4 · 74.0 · 74.7	- 0.1	75·3 72.2 74·4	+ 0.7	64.6	- 5.7	51.4	- 4.5	37.0 41.8 44.0	- 1.2	31.2 36.4		54.0	+ 0.7
Lexington	34.6 + 9.7	36.8 + 5.4	38.8 + 0.4 37.3 36.4	57.4 + 4.7 60.2 59.8	69.8 + 7.5 68.4	72.8 + 0.	7 77·1 · 74·9 · 74.2	+ 1.5	77.0 73.8 74.8	+ 4.4	66.4	— I.O	53.21	— o.9	43.8 42.8 42.0	— 0.2 	37·7 35·8 35·5	+ 7.0	55.5 53.8 53.6	+ 2.5
Morrisonvite  Mt. Pulaski  Palestine  I  Paris  Peoria  I  Philo  Rantonl  *1	32.0 + 5.3	32.9 + 1.35.4 ·····	36.9 — 3.4 36.8	59.5 + 4.9 59.8	69.4 + 7.1	71.2 - 1	76.8	+ 1.0	73·7 77·4	+ 0.8	63.3	— 3.0 — 3.0	53.8	- 1.5 - 0.1	44.7	+ 3.0	37.2	+ 3.6	54.2	+ 1.6
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Rohinson*6 Rushville Springfield	29.0 ······· 30.4 + 5.0	30.0	7 36.2 — 3.7	59.6	70.3	72.4	·· 76.2	- 2.0	75.0	+ 2.0	64.1	- o.3	52.6	_ 2.0	41.0	0.0	35.3 -	+ 3.0	53.8	+ 1.2
Tuscola*1 Averages southern section.	30.9	32.3	36.4	59.6	70.6	72.3	·· 75·1 ·· 75·8		73.0		63.5		51.0	• • • • • •	41.7		35.2 · 35·7 ·	••••	53.7	
Albion	33.6	36.3	38.6	62.4 65.8+ 7.2	70.6	73.0	78.1 .2 79.6	+ 0.6	78.0 79.1	+ 2.5	67.6 69.4	 - o.3	54.4		46.6	+ 1.7	38.4 -	+ 4.0	56.5	+ 1.7
Cobden	35.9	35.9	. 40.2	63.4	71.0	72.7 — 0	.8 77.6	- 1.5	75.0 78.6		68.2		56.4		48.2		37.1 · 40.2 ·		57.9	
Grcenville	32.0 + 3.7	33.8 + 2.	0 37.5 — 4.3	60.9 + 4.9	70.0 + 6.1	72.3 — 1	0, 76.9 •• 77.7	- 1.5	75.1	+ 0.4	67.9° 68.2	_ o.1	53.0	- 3.5	42.7	+ 1.1	37.0	+ 5 0	55.0	+ 1.2
LORISVING	33.0 + 0.1	35.0 + 3.1	$8 - 38.0 \rightarrow 1.8$	02.0 + 5.0	1 09.0 十 5.7	7.0 +!	+4 75.0	- 1.4	13.1	T :-5	OG.	T 11.9	55.9	T 1.2	47.9	T 11.0	3/.7	T 0.9	22.00	T 3.1
McLeanboro*5 Mascontali*5 Mt. Vernon	33.0 + 6.0	34.0 + 0.	5 37·81 4·5 · 39·0 ···· · 41·7 ·····	62.0	71.5 + 7.6	73.2 — 0 77.0 · · · ·	.8 78.1 82.6 78.6	+ 0.6	78.0 81.0 77.4	+ 3.3	73.6	- 1.1	55 · 1 57 · 8 50 · 0	— .6 	45.8 47.5	+ 3	38.8	+ 4.6	56.2 57.9 58.	+ 8
Murldy Valley*3 New Burnside Oincy*1	35.3	. 36.2	41.8	65.0	73.8	75.7	75.0		70.8		65.4		52.4		47·5		37.1		58.5	
Plum Hill* St. John*1 St. Louis, Mo	33.1	34.7	38.8	63.9	73.6	73.0	· 79.8 · 79.5		79.6 79.4		69.4		54·3 55.6		43.2		39.6		56.7	
Averages State averages	31.0	. 37.3	. 40.6	63.6	7 .7	73.9	77.8		78.3		67.6		55.2		46.9		39-5		57.2	
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Note: Unless otherwise indicated the mean temperatures given are from maximum and minimum thermometers. We ans from observed readings. 1. Mean temperature from 7+2+9+9+4:2. 8a+8p-2:3. 7a+7p-2:4. 6a+6p+2:5. 7a+2p+2:4. 4a+6p+3. Estimate a means.

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Ashton* Aurora Cambridge Cheming Chicago Clerr Creek Davenport, Ia Dixon Dubinque, Ia Ft. Sheridan Galva Glenwood* Hospital Joliet Kankakee* Knogythe Latarak Martinton Minonk* Jonnonth Oregon Oswego* Ottawa Reyrolds Riley Rockford Round Grove St. Charles* Scales Mound Streator Sycamore* Tiskilwa* Walnut Winnebago Zion Averages	51 50 49 50 50 50 50 50 50 50 50 50 50 50 50 50	30 29 30 10† 11 29 10† 29 30 30 30 30 29 11 29 29 11 30 30 30 29 11 30 30 30 10 10 10 10 10 10 10 10 10 10 10 10 10	58 60 61 58 56 60 62 58 56 60 62 58 60 62 58 60 62 58 60 60 62 57 58 60 60 60 60 60 60 60 60 60 60 60 60 60	27 27 27 27 27 27 27 28 28 27 27 28 27 27 27 27 27 27 27 27 27 27 27 27 27	70 69 72 63 58 88 70 75 66 63 72 66 68 68 68 70 74 68 68 68 69 71 64 68 68 68 70 71 68 68 63 70 70 70 70 70 70 70 70 70 70 70 70 70	31 31 32 33 34 35 36 36 36 36 36 36 36 36 36 36 36 36 36	8 + 65 85 85 86 85 87 86 85 87 86 85 87 86 85 87 86 85 87 87 88 85 87 87 87 87 87 87 87 87 87 87 87 87 87	17 10 16 16 16 17 16 17 16 17 16 17 16 17 16 16 16 16 16 16 16 16 16 16 16 16 16	91 91 93 994 995 994 988 899 992 993 888 99	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	92 92 93 93 96 96 97 96 98 88 88 90 92 94 94 94 94 94 96 90 92 92 92 92 92 92 92 92 93	54 364 64 67 720 20 20 56 68 60 61 60 61 61 66 66 66 66 66 66 66 66	95 97 95 93 93 93 94 95 95 96 95 96 94 94 98 98 98 98 98 98 99 97 97 96 96 96 96 96 96 96 97	13 14 14 14 15 13 13 14 14 14 14 14 14 14 14 14 14 14 14 14	97 96 94 96 98 96 97 99 97 94 95 95 95 95 96 95 95 96 95 96 97 97 98 98 96 97 99 95 95 96 97 97 99 97 99 99 96 96 96 96 96 96 96 97 97 97 97 97 97 97 97 97 97 97 97 97	4 8 8 4 4 4 4 4 4 5 5 8 8 8 8 8 8 8 8 8	88 88 88 88 88 88 88 88 88 88 88 88 88	2	75 76 72 75 72 75 71 74 75 75 76 82 77 74 75 76 80 77 74 75 76 80 77 74 75 76 81 77 77 74 75 76 81 77 77 77 77 77 77 77 77 77 77 77 77 77	28 28 28 28 14 29 25 28 28 28 28 28 28 28 28 28 28 28 28 28	70 71 70 74 72 74 72 68 68 69 73 73 74 72 70 68 68 69 75 73 73 74 73 74 75 76 76 77 77 77 77 77 77 77 77 77 77 77	16 16 16 16 16 17 17 16 16 16 16 16 16 16 16 16 16 16 16 16	54 58 56 57 58 58 58 55 59 59 66 68 53 57 54 64 68 63 54 55 55 54 55 55 56 56 57 57 58 58 58 58 58 58 58 58 58 58 58 58 58	1- 12 11+ 12 11 11 12 11 11 12 12 12 12 11 12 12
Alexander Atlanta* Atwood* Bloomington Bushnell Carlinville Carrollton Catlin Charleston Coatsburg Decatur East Peoria Effiingham Griggsville Hannibal Mo Havana Hillsboro' Keokuk, Ia 1 a Harpe Lexington Martinsville Mattoon Martinsville Mt. Pulaski Palestine Paris. Peoria Philo. Rautoul.* Robinson* Rose t.ill* Rushville Sprine field Tuscola Averages	51 52 51 55 55 54 55 53 53 54 55 55 56 57 57 57 57 57 57 57 57 57 57 57 57 57	10+ 29+ 20 28 29	69 65 79 66 68 69 64 66 68 67 67 64 65 67 66 68 70 66 68 70 66 68 70 66 68 70 66 69 69 69 69 69 69 69 69 69 69 69 69	27 27 27 27 27 27 27 27 27 27 27 27 27 2	75 76 76 76 76 76 76 76 76 76 76 76 76 76	304 31 301 31 301 303 303 303 303 31 31 31 31 31 31 31 30 30 30 31 31 31 31 31 31 31 31 31 31 31 31 31	89 99 99 88 84 84 87 88 88 88 86 85 85 86 88 88 86 86	27 10 16 10 10 10 17 10 16 17 11 15 17 11 15 15 17 10 10 17 11 15 15 17 11 15 15 16 17 17 19 19 19 19 19 19 19 19 19 19 19 19 19	93 95 94 94 92 92 94 95 96 88 91 95 95 97 99 95 96 97 99 99 91 92 99 93 93 93 93 93	9 10 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	95 95 92 95 96 91 93 92 90 91 94 92 93 97 95 93 97 95 93 94 92 95 95 93 94 94 94 94 94 94 95 96 96 97 97 97 97 97 97 97 97 97 97 97 97 97	30 21 66 6 24 20† 19 7 6  6 19† 64 24 19 6 20 25 20 6 6 20 24 25 26 6 6 6 24 24 25 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	97 98 104 94 99 97 95 100 95 95 96 95 97 95 96 99 94 96 99 99 94 96 99 99 97 99 99 97 99 97 99 99 97 99 97 97	27 28 28 30 30 30 28 28 28 29 21 28 4 29 29 14 4 29 29 29 29 29 29 29 29 29 29 29 29 29	100 100 100 104 93 30 96 97 100 97 100 96 97 102 96 97 102 97 102 97 97 102 97 102 97 97 102 97 97 102 97 97 102 97 97 103 98 98 98 99 99 99 99 99 99 99 99 99 99	6 9 9 6 6 8 8 8 8 6 6 6 6 6 8 8 8 8 8 8	96 92 96 93 93 97 90 90 93 93 93 94 91 94 92 94 98 93 93 93 93 95 96 95 92 94 98 99 99 99 99 99 99 99 99 99 99 99 99	100 2 14 100 2 13 13 100 101 115 12 110 113 13 10 115 12 110 110 110 110 110 110 110 110 110	85 85 81 80 81 76 80 879 80 879 80 874 82 77 8 84 82 77 8 86 81 76 88 80 80 80 80	5 28 28 28 28 28 28 28 28 28 28 28 28 28	78 75 76 78 77 75 77 77 77 77 77 77 77 77 77 77 77	16 17 17 17 16 16 17 16 17 16 16 17 17 16 17 17 17 17 17 17 17 17 17 17 17 17 17	68 60 64 65 67 65 65 60 62 63 64 63 63 67 66 61 65 65 65 65 65 65 65 65 65 65 65 65 65	111 31 12 111 111 11 11 12 11 11 10 31 10 12 11 11 12 11 12 11 12 11 12 11 12 11 12 11 12 11 12 11 12 11 12 11 12 11 12 11 12 11 12 11 12 11 12 11 12 12
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Observed readings. 48 ame temperature occurred on more than one day.

REPORT FOR JANUARY, 1897.

## ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

## WEATHER BUREAU.

WILLIS L. MOORE,

BY

CHARLES E. LINNEY,
OBSERVER AND SECTION DIRECTOR, CHICAGO, ILL.





U. S. DEPARTMENT OF AGRICULTURE.

## CLIMATE AND

OF THE

### WEATHER BUREAU.

Central Office, WASHINGTON, D. C. (WILLIS L. MOORE. Chief.

ILLINOIS SECTION, CHARLES E. LINNEY, Section Director, CHICAGO, ILL.

VOL. II.

CHICAGO, ILL.

No. 1

Sleet was generally reported on the 3d, 13th, 14th, 16th and 20th.

A faint aurora was observed at Palestine on the 4th and at Chemung on the 10th.

The station at Muddy Valley will hereafter appear under the name of Hallidayboro.

The 1st, 2d, 8th, 13th, 14th and 16th were days when fog was noted at many stations throughout the state.

Thunderstorms were general over the state on the 1st, 2d. 3d and 17th, light hail accompaning the storms of the 17th in many counties of the northern section.

Solar halos were observed at most of the stations on the 12th, 18th, 19th, 25th, 26th and 31st; lunar halos on the 12th, 19th and 26th, with individual stations reporting both on several other days.

Observers are again urgently reminded that the only proper way to record a below zero temperature reading is to place before it the minus (—) sign, and that all readings above zero should be entirely free from signs.

January was a month of nearly normal temperature and about twice the normal rainfall; the departures were 0.5° above for temperature and 2.34 inches above for rainfall, The extremes which entered into the temperature average for the month were marked, thus the average temperature of the first two days of the month, considering the state as a whole, was 55°, while that of the 25th was -6°, and of the feed abundant; roads good. five days from the 24th to the 28th inclusive -2°, a short period of cold which has been rarely equaled.

Until the beginning of the cold period, on the afternoon of the 23d, the month was considerably above the normal third, also of moderate warmth, was noted on the 16th and ground.

17th. The first and second days of the month were of equal warmth and much above the usual January temperature. The highest recorded within the state was 70° at Mt. Vernon on the 1st.

Two cold periods occurred during the month, the first from the morning of the 4th to the morning of the 8th, and the second from the 23d to the morning of the last day of the month. The latter was most severe. During this period the minimum temperature of the state fell below zero from the 24th to the 28th, touching the low average of -12° on the morning of the 25th and an actual minimum of -28° at Oregon on the same morning. Twenty degrees below zero or lower was quite generally recorded over the northern section on the morning of the 25th and but one point within the state escaped zero weather, this was the city of Cairo, where four above was registered, this, however, on the 26th. The extreme range of temperature recorded within the state was 98°, while the average of the greatest daily range was but 31°, which is low considering the extremes of temperature which were experienced.

The precipitation of the month was largely in excess of the normal, but it was exceeded in 1890, when the January average touched the remarkable figures of 5.52 inches. The threatening weather which prevailed at the close of December became a heavy general rainstorm throughout the state on the first of the month and continued until the 5th during which time nearly three inches of water fell, thoroughly saturating the ground and relieving the drouth which prevailed during December. A second rain and snow period began on the 12th and continued until the 17th, a third began on the 20th and continued with flurries and light snow until the 27th, giving the state an average of ten days with rain or snow in measurable quantities. The greatest amount measured was 10.38 inches at LaHarpe and the least 1.96 inches at Scales Mound. The snowfall reached an average of 6.7 inches for the state.

Cloudiness was somewhat greater than usual, there were 13 days wholly overcast, 7 partly cloudy and 11 clear. The prevailing wind direction of the month was N.W., with an average hourly velocity of 10.3 miles. The highest velocity recorded was 62 miles from the W, at Chicago on the 17th. The average air pressure for the month was 30.15 inches which is slightly above the January normal; highest pressure 30.62 inches at Chicago on the 30th and lowest 29,29 also at Chicago. on the 17th.

Catlin.—Wheat well protected by snow; stock doing well, F. M. Curtis.

Sycamore.—The precipitation for January was greater than for any previous one during the past 16 years.

Roswell Dow.

LOAMI.—The first part of the month was warm and rainy temperature. It came in with a very warm period which and the latter part cold and snowy; stock is wintering well; lasted until the afternoon of the 3d, a second of lesser wheat was covered with snow during the cold weather and is warmth began on the 8th and extended to the 16th, and a in good condition; there are about six inches of frost in the H. C. Foster.

#### CONDITION OF FARM WORK AND WINTER GRAIN.

Throughout the northern section January was a month of nearly normal temperature and about 2.00 inches above normal rainfall. Winter grain and grasses were reported to be inches in thickness, and on the Embarrass River 6 inches. in fair condition previous to the snow covering of the 23d, with the cold wave following in its wake. At the end of the month the snow covering remained intact, and was from lightning struck a house in this county, but did little damthree to eight inches in depth, with grain probably safe under it. Some little damage came from the freezing and thawing of the first of the month, but it is thought the wheat was sown here and it looks poor, weather hard on it marked benefit received from the great amount of moisture of the month overcome any damaging effect. Most of the streams throughout the north section closed on the 24thand at the end of the month had from 8 to 12 inches of ice; sleighing was good after the 23d, and the ground frozen to a considerable depth; little work being done other than feed-

In the central section the month also proved of nearly normal temperature, but with nearly three inches above normal rainfall. Winter grain and grasses were exposed most of the month and stood much freezing and thawing, with no doubt some injury resulting, but were fairly protected for the cold weather at the end of the month, the snow covering running from one to five inches. The heavy rains at the beginning of the month saturated the soil and were highly beneficial; stock is doing well, feed being they became frozen and snow covered, with fair sleighing in a number of counties. Ice on streams runs from 6 to 10 inches and is of good quality: frost penetrated from six to eight inches. Little work, other than marketing and feeding. is being done.

In the southern section rainfall was much smaller than in the central or northern section, hence but about 1.50 above normal, and about normal temperature. Snow was very light and afforded little or no protection throughout the month, hence considerable damage is reported from freezing and thawing. At the close of the month the snow protection ran from a trace to one inch, with grain looking poor to fair, and considerable swelling of the land visable. Feed is plentiful and stock generally in good condition. Some work was done in stalk fields prior to the cold weather of the last of the month, preparatory to spring breaking.

#### OBSERVERS NOTES.

Oswego.—Fox River closed on the 24th. J. S. Seely. Ashton.—Thunder on the morning of the 17th.

Ira R. George.

Galva.—The 25th was a very severe day, three children were overcome by the cold in coming to school.

Knoxville.—The ice crop here is good and a very large amount is being stored; it is 12 inches in thickness.

C. N. Butt.

HAVANA.—Illinois River closed by ice on the 25th; there are

now 10 inches of first quality of ice being harvested.

J. M. Ruggles.

Charleston,-Ice on ponds at the end of the month &

Jacob B. Dazev.

BLOOMINGTON.—Thunderstorm on the night of the 1-1.

CISNE.—Feed is plentiful and stock looks well. But little

Martinsville.—The week ending the 30th was the coldest I have noted since I have been keeping records. Stock is doing well, wheat standing the weather finely.

J. B. Sheapley.

Friend Grove.—Wheat does not look very well at present, the freeze of the last of November and first of December damaged it some and the low temperature in January has caused the prairie wheat to swell badly, but the timber wheat appears to be all right yet; corn is safely housed here.

V. E. Majors.

Aurora.—The mean temperature of the soil at 6 a.m. during January was 31.2° and of the air at the same hour 16.8°; highest soil temperature at that hour 52° on the 2-3d, lowest  $24^{\circ}$  on several days. The temperature of the soil rose  $6^{\circ}$  unabundant; roads were poor until the cold weather when der the snow covering of the 23d, while the air temperature fell to -12°. Chas. A. Love.

> Riley.—The temperature was up to 34° some time during the night of the 21st-22d, then the cold wave came in with a northwest gale and on the morning of the 24th the temperature was -17° from 6 to 10.30 a.m. On the 25th it fell to -24° which is the lowest since February 9th, 1888. The mean temperature of the month was 1° above normal; total precipitation 2.54 inches above, and the largest of any January during the past 36 years. John West James:

Barometer and Wind Table.

		Ba	rome	eter,				Wind	: ·	,,
Stations.						ove- t.	hour-	Max	imum	velo-
	Меал.	Highest.	Date.	Lowest.	Date.	Total move- ment.	Average bourly.	Miles:	Direc- tion,	Date,
Bloomington										
(airo	30.19	30.58	30	29.62	17	7,773	10.4	38	W.	
( hicago	30.14	30,62	30	29.29	17	13,912	13.1	62	11.	17
Davenport	30.14	30.56	30	29.33	17	7,251	9.7	36	W.	17
Dubuque	30.15	30.58	30	29.34	17	4,746	6.4	36	W	22
Galva	30.20	30.61	30	29.37	17					
Hannibal	30.17	30.59	24	29.39	17	8,022	10.8	40	nw.	4
Keokuk	30.16	30.59	24	29.38	17	6,903	8.5	40	SW.	4
Kishwaukee	30.10	30.54	30	29.35	17					
Minonk	30.09	30.48	30	29.36	17					
Oswego	30.14	30.48	30	29.58	17 17					
Revnolds	30.13	30.58	30	29.39	13					
Robinson	30.10	30.50	30	29.72	3					
St. Louis	30,20	30.59	30	29.51	17	9,324	12.5	50		17
Springfield	30.17	30.58	30	29.44	17	8,306	I1.2	36	W.	is
Rushville	30.16	30.57	25	29.39	17					
Averages	30.15	30.56		29.43		8.280	10.3			
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#### Climatological data for January, 1897.

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			ord,	Temp	eratnr ⊊	e,in d	egre	es Fa	liren		Pr	ecipitat ====	tion, ir			F-4	Sky.		ection	
Stations.	Counties.	Elevation feet	Length of rec years.	Mean.	Departure fror the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number rainy days.	Number clear days.	Number partly cloudy days.	Number cloudy days.	Prevailing dire wind.	Observers
NORTHERN SECTION.																				
Ashtou. Antora. Cambridge. Chemung Chicago Chear Creek. Davenport. Ia Dixou. Dubuque. Ia Dwight. Ft. Sheridan Galva Hospital Jofiet Knoxville. LaGrange. Lanark. Martinton. Minonk Monnouth Oregou. Oswego. Ottawa. Reynolds Riley. Rockford Round Grove. St. Charles Scales Mound Streator Sycamore. Tiskilwa Wantut Wheaton Winnebago. Zion	Kane. I. Henry. McHenry. McHenry. McHenry. McHenry. McHenry. McHenry. McHenry. McHenry. McHenry. Mankakee Henry. Kankakee Will I. Knox. *5. Cook. (arroll. *1. Iroquois. Woodford Warren Ogle. Kendall. *1. Lasalle. I. Rock Island. McHenry. Winnebago. I. Whiteside. Kane. *1. Jo Daviess. LaSalle Pe Kallb. Bureau. *3. Bureau. *3. Bureau. *3. Bureau. *3. Bureau. *1. Winnebago. I. Winnebago. I. Whiteside. *1. Winnebago. I. Whiteside. *3. Bureau. *3. Bureau. *3. Bureau. *3. Bureau. *3. Bureau. *4. Winnebago. I. Winnebago. I. Winnebago. I. Whiteside. *4. Winnebago. *1. Winnebago	676 524 823 824 503 613 725 651 6;77 093 650 541 775 657 883 632 745 775 702 650 500 956 703 715 700 900 626 855 798 717 769	26 25 24 8 8	20.4 20.5 18.2 21.8 20.9 20.8 17.9 20.2 21.6 20.7 22.6 20.7 21.6 21.6 21.6 21.6 21.6 21.6 21.6 22.0 21.6	+2.0 +2.0 -2.2 +1.0 +1.5 +4.6 +4.5 0 +1.0	63 63 63 65 65 64 61 65 59 62 65 59 62 63 59 62 59 63 59 63 59 63 59 63 59 63 59 63 59 63 59 63 59 63 59 63 59 63 59 63 59 63 59 63 59 63 59 63 63 59 63 59 63 59 63 63 63 63 63 63 63 63 63 63 63 63 63	1 1 1 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-24 -25 -19 -:9	25 25 25 25 25 25 25 25 25 25 25 25 25 2	36 43 30  30	4-90 5-65 5-45 3-50 3-50 3-50 3-50 3-50 4-41 3-23 6-32 6-32 6-32 6-32 6-32 6-63 6-63 6-63 6-63 6-63 6-63 6-63 6-64	+4.74 +2.33 +1.86 +0.87 +3.10 +4.66 +4.66 +4.58 +2.03 +2.54 +2.24 +2.54 +1.69	2.25 2.12 1.24 1.38 1.19 6.75 2.04 1.70 0.99 3.65 3.20 2.30 1.80 2.05 2.13 2.13 2.13 2.13 2.13 2.13 2.13 2.13	9.2 13.5 11.0 11.0 11.0 11.0 8.5 9.2 9.2 10.2 10.2 10.2 10.2 10.5 9.5 9.5 10.8 15.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0	14 14 14 16 16 16 16 16 16 16 17 17 17 17 17 17 17 17 17 17 17 17 17	111 10 7 7 10 10 10 10 10 11 12 12 12 11 10 10 10 10 10 11 12 12 13 16 11 10 12 13 16 11 10 12 13 16 11 10 12 13 16 11 10 12 13 16 10 12 13 16 10 12 13 16 10 12 13 16 10 12 13 16 10 12 13 16 10 12 13 16 10 12 13 16 10 12 13 16 10 12 13 16 10 12 13 16 10 12 13 16 10 12 13 16 10 12 13 16 10 12 13 16 10 10 12 13 16 10 10 12 13 16 10 10 12 13 16 10 10 12 13 16 10 10 12 13 16 10 10 12 13 16 10 10 12 13 16 10 10 12 13 16 10 10 12 13 16 10 10 12 13 16 10 10 12 13 16 10 10 12 13 16 10 10 10 10 10 10 10 10 10 10 10 10 10	8 77 12 3 5 5 7 7 7 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	12 14 12 18 16 17 13 16 15 14 18 10 17 13 8 10 17 13 14 16 13 18 10 10 11 11 11 11 11 11 11 11	W. W	Ira R. George, Lr M. M. Robbias, S. B. Randall, Jos, Kuhles, Gentrai office, & H. K. Smi h, F. J. Walz & Einstace Shaw, L. si. Tarr. si Prof. G. W. Horton, Post Surgeon U. S. A. Prof. F. U. White, E. Hl. Hospital, F. M. Muhlig, C. N. Butt, Prof. F. E. Sauford M. N. Wertz, Geo. W. Bunker, O. M. Davison, D. J. Strang, Rev. A. P. Haten J. S. See, Dr. J. C. Harris, Thos. C. Lewis, John West James, Hosmer C. Porter, R. A. Hawley, S. L. Adams, Joseph Vipond, R. Williams, Roswell Dow, W. I. Greeley, O. C. Nassie, Wm. H. Johnson, Frank Osborn, Robert M. Gerafil,
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#### Daily precipitation for January, 1897.

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. 05

.09 +03

<sup>.00</sup> † Trace, when precipitation is less than o.or of an inch-

### U. S. DEPARTMENT OF AGRICULTURE.

REPORT FOR FEBRUARY, 1897.

## ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

## WEATHER BUREAU.

WILLIS L. MOORE, CHIEF OF BUREAU.

BY

CHARLES E. LINNEY,
OBSERVER AND SECTION DIRECTOR, CHICAGO, ILL.



U. S. DEPARTMENT OF AGRICULTURE,

## WEATHER BUREAU.

Centerl Office, Washington, D. C. (WILLIS L. MOORE. Chief.

#### ILLINOIS SECTION,

CHARLES E. LINNEY, Section Director,

CHICAGO, IIL.

VOL. II.

CHICAGO, ILL.

The winter just closed was a mild one, early guessers to the contrary notwithstanding.

Fog prevailed at many stations in the state on the 5th and 6th, also in the northern section on the 3d and 12th.

The Observer at Charleston reports the appearance of meadow larks and blue birds on the 14th and of robins on the 17th.

Lunar halos were generally observed on the 9th, 10th, 14th, 16th, 17th and 18th; solar halos on the 1st, 14th, 16th, 17th, 18th, 21st, 24th, 25th and 27th,

faint ones at Ashton, Riley, and Scales Mound on the slight amount which fell with each storm kept the total 3d, also at Kishwaukee on the 21st and 27th.

February this year was very nearly a match for the same month last year, the average temperature and precipitation with flurries or light showers until the 8th, a second began being almost the same, the warmest and coldest days, however, changed places.

Thunderstorms were general over the northern section on the 20th, over the central the 20th and 21st and over the southern the 20th, 21st, and 22d. Sleet and fine hail came with the storms in each section.

The crop season for 1897 begins on the 6th of April, when the weekly bulleting will be resumed. Several improvements are contemplated and it is hoped to make the bulle-ground just previous to the severe weather of the 27th. tins of greater value than ever before.

should be noted whenever a frost occurs which is destructive, N.W. with an average hourly velocity of 9.4 miles. The to the staple products of the locality or when the tempera-highest velocity recorded was 54 miles from the E. at ture falls to or below 32°.

The evening of the day is the proper time to end the day's 27th, lowest 29.57 at Davenport on the 16th.

record and observers should adopt the plan of completing their work at that time, even to writing up the tissue forms. By this plan they will be sure to avoid skipping a day, have their entries complete and on the proper day and be rid of a tedious piece of copying at the end of the month.

The month of February was one of very even temperature, averaging about 2.2° above the normal. The first half of the month was exceptionally cloudy, with frequent showers or snow flurries and little or no change in temperature. There were several warm days but no marked cold period occurred until the beginning of the cold wave on the 23d, from which date the temperature dropped to its lowest point on the 27th, touching -12° at Scales Mound on the morning of this day. The average minimum temperature for the state on that morning was zero and the average temperature for the day 14°.

The 13th, 16th, 17th and 20th were all days of high temperatures, the latter proving the warmest day of the month. with an average temperature of 46°. The highest recorded within the state was 73° at McLeansboro on this day. This gives an extreme range in temperature of 85°, while the average of the greatest daily range was 32°.

The precipitation for the month was much below the normal in the northern and central sections but nearly normal in the southern, giving thus an average deficiency of about 1.02 inches. At a number of stations in the central and northern sections less than an inch of precipitation was A beautiful aurora was observed at Chemug on the 2d, and measured yet the rain and snow periods were frequent. The amount down very low, although the average number of days with precipitation occurred.

A general rain period began on the 4th and continued on the 10th and ended with the 12th, a third passed over the state on the 15th, a fourth from the 20th to the 22d, and light flurries of snow closed the month on the 26th and 28th. The least amount recorded was 0.69 of an inch at Bushnell, the greatest was 5.13 inches at Golconda; the greatest amount in any 24 hours was 2.18 inches at Cisne.

The snowfall of the month averaged 6.1 inches, a fair amount falling over the entire state although in the southern section it did not last long. Throughout the northern section fair protection was given to the soil until the middle of the month and a slight covering again overspread the

There were eight rainy days during the month (about the normal) and 7, 8 and 13 respectively clear, partly cloudy Observers are requested to please note the occurrence of and cloudy, a high percentage of cloudiness for a 28 day frosts beginning with the first of April. A killing frost month. The revailing wind direction for the month was Chicago, on the 22d. The average air pressure for the month was 30.07 inches, highest 30.77 at Keokuk on the

#### CONDITION OF FARM WORK AND WINTER GRAIN.

Throughout the northern section the month was marked by light rainfall and cloudy weather, with even temperature. About one-half the normal rain fell and the temperature averaged fully 2° above normal; but one severe cold wave was experienced, that of the 24th to 27th. Considerable snow fell but it only remained a short time and after the 17th the ground was practically bare. The heavy precipitation of January and most of that of February has been retained in the ground and it is well moistened. The little wheat of the north section seems to be in fair condition, little damaged by the winter; rye is also in fair condition and grass seems to have stood the winter well. The weather has been favorable to stock and it is generally in good condition. A large crop of good ice was harvested. Little work has yet been done although some activity is reported along the south tier in preparing for later work.

In the central section the month was dry and above normal temperature, with fair snowfall which went off quickly affording little or no protection to grains and grasses. No severe weather was experienced until the 25th, but reports show that wheat has been generally injured and many report soft wheat entirely killed. Some of the farmers talk of plowing up and considerable talk is heard of sowing spring wheat later. Rye is in better condition than wheat; clover seems to have been somewhat injured, but probably not more than usual. Considerable activity was reported in the fields at the end of the month breaking stalks, burning and preparing for later work. Fruits are reported to be uncertain but probably somewhat injured, peaches especially. Stock is in good doudition; a large crop of good ice was harvested.

In the southern section about the normal precipitation fell, being much greater than in the central or northern; snowfall was light and gave no protection; temperature slightly above normal and very even. Zero weather did not reach the southern section during the cold period at the end of the month. Grain and grasses were exposed during the entire month and reports indicate a continuation of the poor condition shown at the end of January, grain much damaged and looking very badly. Some activity in fields and preparation for spring work is reported. Roads have been very bad during most of the month; stock is doing well.

#### OBSERVERS NOTES.

CLEAR CREEK.—A very even month. H. K. Smith. Catlin.—Wheat and clover raised badly by frost.

F. M. Cnrtis.

HAVANA.—Ice harvest closed on the 12th, ice passed ont of the river on the 18th.

J. M. Ruggles.

Louisivlle.—An unusually hard thunder-storm occurred about 4 a. m. on the 20th, Belford A. Jenkins.

CINNE.—The snows have remained but a short time; have had no below zero weather during the month. W. H. Mix.

Dwight.—Severe thunderstorm on the morning of the 20th. Robins seen on the morning of the 21st.

G. W. Horton.

MARTINSVILLE.—Wheat received very little protection by the snew and is suffering from freezing and thawing.

J. B. Sheapley.

Sycamore.—Snow gave fair protection to erops until the 19th; sleighing from the 23d of January to the 16th of February.

Roswell Dow.

IRON.—Lightning and heavy thunder on the 20th, 21st and 22d; wheat badly damaged; not much farm work during the month.

W. F. Hoskins.

Oswego.—At the end of the month the ground is barely covered with snow, we have had frequent snows but they have not stayed long.

J. S. Seely.

Lanark.—Thunder and lightning on the 20th; month closed with cold northeast wind and trace of snow on the ground; stock doing well.

M. N. Wertz.

ATLANTA.—A remarkably cloudy month, with even temperature, only one zero record, and no rough storms. Roads have been muddy part of the month. R. W. Burt.

Oregon.—A unusually favorable winter for stock, there is a great abundance of rough feed, as well as eorn and oats; winter grain is apparently well preserved.

A. P. Hatch.

Aurora.—Mean temperature of the soil at 6 a.m. was 29.6° and of the air at the same hour 23.7°. The highest soil temperature at that hour was 34° on the 15th, and the lowest 14° on the 27th, the air temperature on this morning being four below zero. Chas. A. Love.

RILEY.—Mean temperature of the month was 3.7° above the normal of the past 36 years and precipitation 0.17 below; a month of very even temperature. The mean temperature of winter, 24.1°, was 3.5° above, and total precipitation, 6.57 inches, was 1.07 above the normal of the past 34 winters.

John West James.

Barometer and Wind Table.

		Bar	ome	ter.				Wind		
Stations.						re-	bour.	Maxi	imum city.	ve o-
	Mean.	Highest.	Date.	Lowest.	Pate.	Tetal move- ment.	Average hour-	Miles:	Direc- tion,	Date,
Bloomington						*				
Cairo	30.06	30.76	27	29.59	21	6,016	9.0	26	n.	25
Chicago	30.09	30.61	27	29.02	22	11,158	18.1	51	e.	22
Davenport	30.67	30.73	26	29.57	16	5,708	8.6	32	ne.	21
Dubuque	30.08	30.71	26	29.60	16	4,303	6.4	28	ne	21
Galva	30.08	30.76	26	29.65	16					
Hannibal	30.09	30.71	27	29.69	20	6,116	9.1	36	w.	20
Keokuk	30.08	30.77	20	29.65	21	5,358	8.0	27	w.	24
Kishwaukee	30.06	30.58	26	29.60	22					
Minonk	30.02	30.56	26	29.64	22					
Olney	30.07	30.61	27	29.68	6					
Oswego	30.19	30.55	20	29.58	22					
Reynolds	30.08	30.74	26	29.61	16					
Rushville	30.02	30.00	27	29.65	6					
St. Louis	30.09	30.76	27	29.66	5	7,121	7.1	31	s.	13
Springheld	30.08	30.72	27	29.69	5	6,425	9.2	28	8.	13
						0,423				
Averages	30.47	30.68		29.63		6,533	9.4			

Climato	legical	date for	February.	1407
Cilinato	TOBICHI	uate for	renruary.	17317

					Clin	nato	legie	ald	date	for	Febr	uary,	1897							
			rd,	Tem	peratur	e,in d	egrees	Fal	hren	helt.	Pr	ecipitat	lon, ln	lnehe	8.		Sky.		ion	
Stations.	Counties.	Elevation feet.	Length of reco	Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal.	Greatest in 24 hours.	Total snowfall unmelted.	Number rainy days.	Number clear days.	Number partly cloudy days.	Number cloudy days.	Prevailing direction wind.	Observers.
NORTHERN SECTION. Ashton. Aurora. Cambridge. Cheimung ('HiCAtvO (lear Creek. Davenport, Ia. Dixon. Dubuque, Ia. Dwight. Ft. Sheridan. Galva. Ilospital Joliet. Knoxville. Lat-range. Lat-range. Lanark. Martinton. Minonk. Aonmouth. Oregon. Oswego. Ottawa. Reynolds. Riley. Rockford. Round Grove. St. Charles. Scales. Jound. Streator. Sycamore. Tiskilwa. Wantut. Wheaton. Winnebago. Zon.	Kane.   Henry.   McHenry.   Mankakee   Henry.   McHenry.   McHenry	8 24 503 725 657 657 657 657 657 883 650 745 744 756 550 500 956 703 715 709 938	17 26 24 8 	27.9 27.8 28.8 29.8 29.0 25.0 29.7 29.4 29.2 20.9 29.4 27.5 27.0 27.0 28.5 25.1 27.0 28.5 25.1 27.0 28.5 27.0 28.5 27.0 28.5 27.0 28.5 27.0 28.5 27.0 28.5 27.0 28.5 28.5 28.6	+5.8 +4.3 +1.6 +2.6 +2.5 +6.1 +6.6 +1.5 +3.7	44 49 53 50 48 44 41 51 51 42 48 48 48 42 42 42 48 49 40 43 45 45	13  -   20	- 3 - 8 - 1 - 4 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5	27 27 27 27 27 27 27 27 27 27 27 27 27 2	33 32 34 38 35 31 32 37 30 33 37 37 32 36 31 35 37 37 32 35 37 37 32 33 33 33 33 33 33 33 33 33 33 33 33	1.55 1.31 1.27 1.45	+0.56  -0.08 +0.01 -0.03  -0.45 -0.57 -1.21 -0.68 -0.07 -1.18 -0.7 -1.18 -0.58 -0.39	0.47 0.58 0.70 0.45 0.70 0.39 0.67 0.40 0.53 0.50 0.50 0.37 0.40 0.30 0.45 0.53 0.45 0.55 0.55 0.55 0.46 0.20 0.46 0.20 0.46 0.20 0.46 0.50 0.40 0.50 0.40 0.50 0.40 0.50 0.40 0.50 0.50 0.40 0.50 0.40 0.50 0.40 0.50 0.40 0.50 0.40 0.50 0.40 0.50 0.50 0.50 0.50 0.50 0.40 0.50 0.40 0.50 0.50	8, 2 9, 8 8, 8 14, 5 6, 5 9, 5 10, 8 10, 2 4, 7 5, 2 8, 5 6, 0 6, 0 6, 0 7, 0 9, 0 9, 5 11, 5 9, 5 11, 5 9, 5 11, 6 11, 7 11,	10 10 9 9 9 10 6 6 11 8 8 9 9 6 6 6 9 7 7 7 8 8 8 5 5 8 9 5 5 7 7 9 9 11 1 1 8 8 8 12 9 6 6 9 9 9 7 7 7 6 6 8	6 4 1 1 6 6 5 5 5 4 9 6 6 8 6 6 8 6 6 6 6 6 6 6 6 6 6 6 6 6	7 9 15 6 7 10 9 8 8 3 9 11 3 6 8 8 7 10 10 11 2 14 11 1 9 6 9 10 11 8 10 6 6 10 7 7 7	15 15 15 16 16 16 16 17 17 17 18 18 15 16 16 17 17 17 18 18 15 16 16 17 17 17 17 17 17 17 17 17 17 17 17 17	W. NW. W. V. e. NW. NW. W. NW. NW. NW. NW. NW. NW. NW.	Ira R. George, Dr M. M. Robblas. S. B. Randall. Jos. Kuhles. Central Office. @ II. K. Smith. F. J. Walz@ Eustace Shaw. L. M. Tarr. @ Prof. G. W. Horton. Post Surgeon U. S. A. Prof. F. U. White. E. HI. Hospital. F. M. Muhig. C. N. Butt. Prof. F. E. Sanford M. N. Wertz. Geo. W. Bunker. O. M. Davison. D. J. Strang. Rev. A. P. Haten J. S. Seet Dr. J. O. Harris. Thos. C. Lewis. John West James. Hosmer C. Porter. R. A. Hawley. S. L. Adams. Joseph Vipond. R. Williams. Roswell Dow. W. I. Greeley. O. C. Nussle. Wm. H. Johnson. Frank Osborn. Robert Angrath.
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Note,—Unless otherwise indicated the highest, lowest and mean temperature are from maximum and minimum thermometers. \*Highest and lowest temperature from observed readings. 1. Mean temperature from 7+2+9+9-4:2.8 + 8p+2:3.7 + 7p+2:4.6 + 6p+2:5.7 + 2p+2.4.6 + 2p+2

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#### Daily precipitation for February, 1897.

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<sup>+</sup> Trace, when precipitation is less than o.o. of an inch.

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REPORT FOR MARCH, 1897.

## ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

## WEATHER BUREAU.

WILLIS L. MOORE,

 ${\bf B}{\bf Y}$ 

CHARLES E. LINNEY,
OBSERVER AND SECTION DIRECTOR, CHICAGO, ILL.





U. S. DEPARTMENT OF AGRICULTURE,

OF THE

### WEATHER BUREAU.

Central Office, WASHINGTON, D. C. WILLIS L. MOORE, Chief.

### ILLINOIS SECTION, CHARLES E. LINNEY, Section Director, CHICAGO, 11.L.

Vol. II.

CHICAGO, ILL.

21st and 23d.

Fog prevailed on the 1st, 2d, 5th, 8th, 9th, 17th, 18th, 19th, 30th and 31st.

Faint auroras were observed in the north part of the state on the 12th and 15th.

Records of frost should be continued until the season is so far advanced that none are liable to occur.

Solar halos were observed on the 12th, 14th, 15th, 16th, 18th, 22d, 24th, 28th and 29th; lunar halos on the 15th, 16th and 20th.

The 4th and 14th were days of nearly equal low temperature and the coldest of the month, the 19th was the warmest, with a temperature of 58°,

The many answers for crop reporters which have received from all parts of the state permits us to begin the crop season with a larger list of reporters than ever before. The season begins under most unfavorable weather conditions, but it is hoped that an early change may relieve the cold and cloudiness and turn the excessive moisture into a means toward a bountiful season.

Thunderstorms prevailed over the northern section on the morning of the 8th, the 9th, 19th and 22d; over the central section on the 4th, 5th, 8th, 9th, 21st, 22d and 31st; over the southern section on the 4th, 5th, 8th, 9th, 11th, 17th, 18th, 22d, 23d and 31st, with scattered storms in parts of the state on the 2d, 7th, 10th, 28th and 29th; hail accompanied the storms of the 2d, 8th, 9th, 10th, 19th, 21st, 22d, 23d and 31st.

The temperature of the month of March averaged nearly 2° daily above the normal and the rainfall ran far above the normal, the departures being plus 1.8° and plus 3.18 inches. The rainfall reached the great amount of 5.96 inches, which is an inch and a half above any previous March Davenport on the 19th.

record since systematic records have been made within the

The temperature of the month was practically free from rapid changes or extremes. Two periods of moderate cold occurred, the first on the 3d-4th and the second on the 15th-16th, the lowest temperature of the month at the individual stations being generally recorded on the 4th, Warm waves were likewise not so marked as usual, two periods are noticed which were slightly above the general warmth, the first from the 18th to the 21st and the second the 30th-31st, the highest temperature at the individual stations being scattered in these dates. The actual highest recorded No. 5 was 79° at Golconda on the 21st, the lowest -2° at Chemung on the 4th, giving thus an extreme range of temperature of Sleet storms prevailed on the 1st, 2d, 4th, 12th, 20th, 81°, while the average of the greatest daily ranges for the state was but 31°.

> The precipitation of the month was the most remarkable feature of it. There was thirteen days on which precipitation in measurable amounts fell, raising the total for the state very high, and that for the central and southern sections to an exceesive amount, the latter reaching the remarkable average of 10.26 inches. The precipitation was well scattered throughout the month, the first rain period extending from the 1st to the 5th, the second the 8th-9th, third 11th to 14th, fourth 17th to 24th, and last, in the central and southern sections, from the 29th to the 31st, The greatest fall measures for the month was 12.63 inches at Cobden; the least 2.63 at Monmouth, the greatest in any 24 hours 5.97 inches at Robinson on the 4th-5th.

> Snow fell in liberal amounts throughout the northern section, the storm of the 23-24th giving a remarkable fall. This in fact extended over the north half of the state and over the northern section nearly a foot fell. The average fall for the month was 5.9 inches.

> The results to the farm lands and roadways of the state by the great amount of moisture which has been poured forth upon them are given on the following page in the short discussion of farm work, but I might add here that the soil has seldom held so much water at any season of the year, and probably never before at the end of March. The fall since the first of the year has reached 12.54 inches, and the southern section has been struggling to dispose of 18,54 inches, an amount nearly equal to one-half the annual rainfall.

> The month was greatly deficient in sunshine, the average number of cloudy days was 14, partly cloudy 9 and clear 8, thus nearly one-half of the month was wholly cloudy and three-fourths of it partially so. The prevailing wind direction of the month was S.E., with an average hourly velocity of 11.0 miles; the direction being unusual for March, and the velocity high. The greatest velocity recorded was 55 miles per hour from the S. at Cairo on the 5th. The atmospheric pressure of the month averaged 30.03 inches, greatest pressure 30.60 inches at Dubuque on the 6th and 16th, and at Galva on the 16th, lowest 29.20 inches at

#### CONDITION OF FARM WORK AND WINTER GRAIN

Little or no work was done throughout the northern sec- covered with water. tion during March, the ground being to wet. Cloudiness was largely in excess, temperature slightly above normal with water, no plowing done; grass starting finely, all kinds and rain and snowfall large. At the end of the month there was little frost in the ground, and no snow remained, but the ground was full of water and streams overflowing. Wheat along the south tier was generally reported in poor condition, rye over the section fair; stock in good condition; roads impassable.

work done and the season backward, ground full of water highest soil temperature at that hour 45° on the 31-1, lowand stream's over-flowing. Temperature of the month was est 24° on the 4th. even and slightly above the normal, rainfall largely in excess. Wheathrye and clover are reported in poor condition, wheat especially being badly injured. Forest trees were beginning to bloom at the end of the month and fruit buds swelling, with indication that all except peaches have escaped the winter unharmed. Pastures were starting at the end of the month; roads throughout the month were very and geese on the 11th. Ice moved out of the Mississippi bad.

In the southern section little work was done at the close no farm seeding done at the end of the month. of the month, only an occasional garden made and a few oats sown, no potataes planted and little or no plowing done. The rainfall of the month was excessive over the entire section, temperature slightly above normal and sunshine lacking; ground wet and soggy, and season late. Fruits were beginning to bloom at the end of the month; stock was in good condition; roads very bad; what generally poor except in the extreme south where slightly better reports are given.

The state generally closed the month with a large excess of moisture and farm work greatly delayed by it; everything at a standstill.

#### OBSERVERS NOTES.

Catlin.—Oats seeding began here on the 29th.

F. M. Curtis.

Winnebago.—No farm work done; roads impassable.

Frank Osborn.

Knoxyille.—The season has a dreary outlook for farmers. too much cloudy weather. C. N. Bntt.

Oregon.-At the end of the month farmers are plowing some; cattle have wintered well. A. P. Hatch.

HAVANA,—Illinois River was 16 ft, above low water on the 27th; towns all inundated on the Illinois and Sangamon. J. M. Ruggles,

MINONK,—Oats sowing began on the 30th with a few farmers, the ground is wet on low land, and roads impassable. O. M. Davison.

Oswego.—At the end of the month the ground is settling finely, roads drying and a faw have begin to plow on dry

Irox.—The Little Wabash River has beaten all previous

records on high water; on farm work done vet; all low land W. F. Hoskins.

Martinsville.—Wheat badly killed; ground badly soaked of stock doing well. J. B. Sheapley.

Galva.—At 6.35 p.m. on the 19th we had heavy rain, with thunder, lightning, hail and moderately high wind; .47 of an inch of rain fell in 25 minutes. F. U. Whi'e.

Aurora.—The mean temperature of the soil at 6 a.m., for In the central section the month closed with little or no March was 33.0°, air temperature at the same hour 28.2°: Chas. A. Love.

> ATLANTA. - Grass started finely from the 17th to the 20th when cold checked it until the 29th; all garden and farm work kept back and no prospect of spring seeding at the end of the month; ground full of water. R. W. Burt.

> Lanark.—Blue birds first appeared here on the 10.h. larks, River on the 20th and the first boat passed up on the 22d;

> > M. N. Wertz.

RILEY.—The mean temperature of the month was 1.1° above the normal, precipitation 1.50 inches above. Greater rainfall was measured in 68, 70, 77, 81 and 82. The snow of the 23d was much the heaviest at one time since March 19th, 1881. John West James.

Louisville.—The rainfall of the month is much the largest March rainfall on record here; from 11 a.m. on the 4th to 7 a.m. of the 5th 4.65 inches of water fell, the largest amount which has fallen here in several years in so short a space of time. It caused great floods in the streams and did much damage by washing out fences, bridges, etc.

Belford A. Jenkins.

#### Barometer and Wind Table.

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Norg.—Unless otherwise in licate 1 the highest, lowest and mean temperature are from maximum and minimum thermometers. \*Highest and lowest temperature from observe 1 readings. 1. Mean temperature from 7+2+9+9+4:2:8a+8p+2:3:7a+7p+2:4:6a+6p+2:5:7a+2p+2:a.b.c.d. etc. number days missing. (6. U. S. Weather Bureau Stations. 4Same temperature occurred on more than one day. + Trace in precipitation column when amount is less than 0.01 of an Inch.

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#### Daily precipitation for March, 1897.

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REPORT FOR APRIL, 1897.

## ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

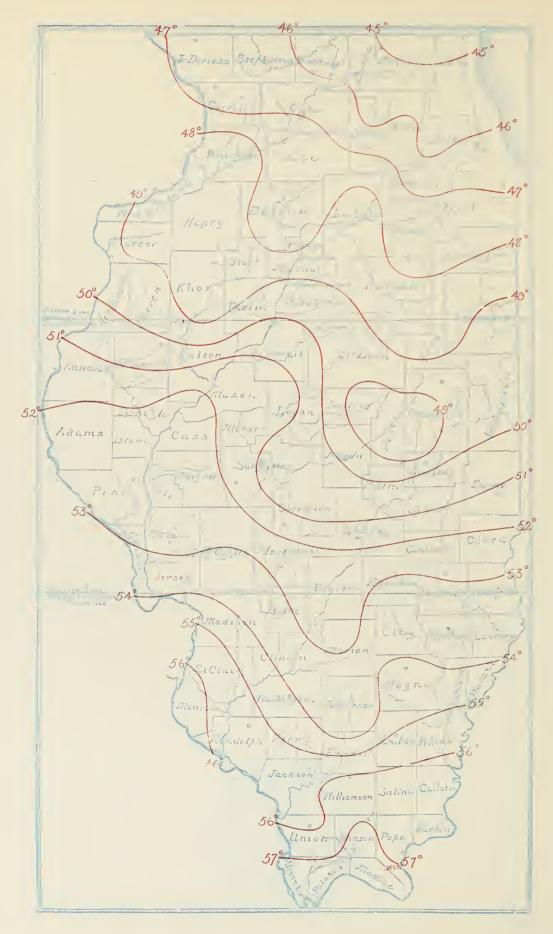
## WEATHER BUREAU.

WILLIS L. MOORE, CHIEF OF BUREAU.

BY

CHARLES E. LINNEY,
OBSERVER AND SECTION DIRECTOR, CHICAGO, ILL.





U. S. DEPARTMENT OF AGRICULTURE,

## CLIMATE AND CROP SERVICE

OF THE

### WEATHER BUREAU.

Central Office, WASHINGTON, D. C.

WILLIS L. MOORE, Chief.

ILLINOIS SECTION, CHARLES E. LINNEY, Section Director,

CHICAGO, ILL.

VOL. II.

CHICAGO, ILL.

No. 4

Faint aurora was observed along the north border on the 16th, 19th, 23d and 25th.

A general sleet storm prevailed on the 20th, and sleet was noted on the 1st, 7th, 9th, 12th, 16th and 23d.

Fog prevailed in northern counties on the 3d and 11th and at individual stations throughout the state on the 2d, 4th, 14th and 15th.

Frost was frequent throughout the month, the morning of the 19th and 20th proving very sharp, with ice over most of the state; lighter frost also occurred on the 27th. .

A larger difference was noted this month between the daily and monthly mean temperatures secured from the 7 a, 2 and 9 p. m. reading, and that from the maximum and minimum temperatures, than has occurred in many months previous.

Lunar halos were generally observed on the 11th and 12th and at a few stations on the 7th and 8th; solar halos were commonly observed on the 1st, 16th, 20th, 21st and 23d, and at individual stations on the 2d, 3d, 6th, 8th, 11th, 12th, 18th, 19th, 24th and 28th.

Thunderstorms occurred very generally over the state on the 12th, 13th, 18th, 22d, 23d, 24th and 28th, with scattered storms on the 1st, 2d, 3d, 4th, 7th, 8th, 9th, 19th, 21st, 25th and 29th. Hail accompanied the storms of the 8th, 10th; 16th, 18th, 21st, 22d, 23d and 24th.

The mean temperature of April averaged 1.6° below the normal, and the rainfall 0.71 of an inch above, the south half of the state having a wet month. The first half of the month was quite uniformly cool. A warm wave setting in then reached its climax on the 18th and was quickly followed by the greatest cold wave of the month, on the 19th and 20th, the latter proving the coldest day of the month, with an average temperature of 37°. On the morning of

the 20th, also, the lowest temperature of the month, 18°, was recorded at Dwight. A second cold period beginning on the 29th, closed the month.

The first warm period, as suggested above, was that on the 18th; a second followed from the 21st to the 24th, the temperature rising after the cold wave quite as remarkably as it fell; the third and last warm period came on the 28th. The 22d was generally the day of highest temperatures, although in the southern section the 24th prevailed. The highest temperature recorded within the state was 85°, noted at Albion on the 24th. This gives an extreme range of 67°, while the average of the greatest daily range was 36°, the latter proving quite high owing to the marked change in temperature on the 19th of the month, in some cases exceeding 45°.

The rainfall of the month came in four rain periods, the first, on hand at the beginning of the month, continued until the 4th and in the northern section until 6th; the second began in the southern section on the 7th and continued until the 16th; the third began on the 20th and continued until the 25th and the fourth began on the 28th and closed the month. Thunder showers were frequent and hence the amount of rain measured at neighboring stations often varied greatly. The south half of the state had several severe storms with heavy rainfall, and the average precipitation for the central and southern sections was above five inches. The greatest amount recorded within the state was 8.31 inches at Cobden, the least 1.88 inches at Ottawa and Streator. The greatest amount recorded in any 24 hour was 2.43 inches, also at Cobden.

The rain period which prevailed from the 7th to the 16th came with temperature slightly below the general average, and on the morning of the 10th snow fell quite generally over the state; in the northern section it reached about 6 inches at one station and averaged 1.4 inches for the entire section. The average snowfall for the state thus became 0.6 of an inch.

The month was cloudy as well as cool and wet; there were 13 days wholly overcast and 10 partly so, while but 7 were clear; rain fell in measurable amount on 13 days. The prevailing wind for the month was NW. although the margin in favor of this direction was slight and nearly every direction appears in the individual reports. The average hourly velocity was 12.3 miles, which is quite high for the month; the greatest velocity was 67 miles from the S. at Chicago on the 18th.

The air pressure for the month averaged 30.05 inches, which is very high considering the large amount of rainfall during the month, and corresponds somewhat with the uniform coolness and the deficient temperature. The highest pressure recorded was 30.74 inches at Chicago on the 20th, lowest 29.54 at Kishwaukee on the 5th. The year thus far has proven a very wet one, the total average rainfall for the state since January 1st has reached 16.80 inches, and in the southern section 24.41 inches, the latter exceeding one half of the yearly average.

#### THE PROGRESS OF THE CROP SEASON.

CHICAGO, APRIL 5, 1897.

The temperature of the week averaged from 2° to 7° above normal, and the rainfall ran from over three inches sown, some gardens made and potatoes planted in the south part, and a very little plowing done. Seeding will begin in the northeast counties this week and make rapid progress if dryness and warmth favor. Winter grain in the extreme north and extreme south of the state is reported in fair condition, especially on upland in the south, elsewhere it is very poor to fair, wheat being much winter killed, clover in profusion; forest are leafing rapidly; roads improved. likewise, while rye is but fair. Grasses are starting finely; fruits are considered unharmed, except peaches.

Chicago, April 12, 1897.

The past week was cool, wet and cloudy, the temperature of the state averaging from 2° to 5° below the normal, and rainfall running from a tenth of an inch in the north section well; cherry trees are blooming. to over two inches in the southern; one-half of the state exceeding the normal rainfall. Sharp frosts occurred on the morning of the 10th and 11th, and one to four inches of snow fell over the north half of the state on the 10th. Farm work has been further delayed, the soil continues wet and soggy. Oats and spring wheat seeding has been prevented except in east and northeast counties where one-third to one-half of the crop is in. Gardening, potato planting and plowing have also been retarded. The poor condition of winter wheat, rye and clover is still further confirmed—much damaged, wheat seriously. Grasses are starting well.

CHICAGO, APRIL 19, 1897.

The temperature of the week averaged from 1° to 5° cloudy week, with sharp frosts on several mornings, and ice was 1° below normal, and precipitation 0.13 above. on the 17th and 19th. Vegetation is not far enough advanced to be damaged except probably in the southern section. The soil has dried out slowly, some plowing has been done, more oats and spring wheat have been sown, and gardens and early potatoes planted, but the work is slow and difficult. Some of the early sown wheat and oats are up, but much of the oat seed is rotting in the overwet ground. Wheat is unimproved and few fields will remain; grasses are advancing slowly and generally not ready for pasturage; fruits are blooming over the southern section and forest trees northward to the north section; roads slowing improving and high waters subsiding.

CHICAGO, APRIL 26, 1897.

The temperature of the past week averaged from 1° to 6° above normal and rainfall from one-half in southern to nearly twice normal in northern section; generally a favorable week, warm and showery, and much work has been done. Oats seeding is mostly finished; spring wheat sown, also some barley; gardening and potato planting continue; much more progress has been made in plowing, and some corn planting has been done in the southern section. A few have resown oats because of poor seed, wet land and cold weather; much of the crop is above ground. Pastures and meadows are growing finely and stock is being turned out. Fruits seem unharmed by the freeze, except peaches slightly damaged, and nearly all varieties are in full bloom in the south half of the state; forest trees are leafing.

CHICAGO, MAY 4, 1897.

The temperature of the week averaged from normal in south counties to about 5° below in central and north; rainfall much scattered but slightly below normal. The first of the week was very favorable, last half cold, wet and in southwest counties to less than a quarter of an inch in cloudy, with sharp frost in north and central section and north and northeast counties. The soil everywhere is wet, light in southern; little harm is thought to have been done. in most of the state far too wet for work and little has Oats are mostly sown and coming up finely, also spring been done. Few oats and a little spring wheat have been wheat, early gardens, early potatoes, grasses and meadows, stock being turned out. Gardening, potato planting, and plowing for corn continue, with corn planting well along in south and beginning in the central and northern sections. Rye continues fair and is heading in extreme south; winter wheat unimproved and little will remain to mature; fruits are blooming as far as the north section, all but peaches

#### OBSERVERS NOTES.

LANARK.—Spring two weeks later than in 1896.

M. N. Wertz.

Minonk.—Corn planting began on the 28th; oats look O. M. Davison.

ATLANTA.—A cool, cloudy, raw month, little sunshine, ground wet and little work done. R. W. Burt.

CLEAR CREEK. -- Ice formed one-half inch in thickness on the 20th; chickens frosted their combs. H. K. Smith.

Ashton.—Ice formed three quarters of an inch in thickness on the 20th; season about two weeks later than last year.

Aurora.—The mean temperature of the soil at 6 a.m. during April was 43°, air temperature at the same hour 41°; highest soil temperature at that hour 58° on the 24-25th, lowest 34° on the morning of the 20th. Chas. A. Love.

RILEY.—On the 19th we had one of the greatest falls in temperature I ever knew; temperature down to 23° at 5 a.m. below normal and rainfall considerably below, a cold, a fall of 45° in 14 hours. The mean temperature of April

John West James.

Louisville.—On the morning of the 20th the ground was frozen, and ice formed one-quarter to three-eights of an inch thick; peaches were in full bloom, but owing to the wind and clouds no damage resulted; fruit prospects excellent. Belford A. Jenkins.

Barometer and Wind Table

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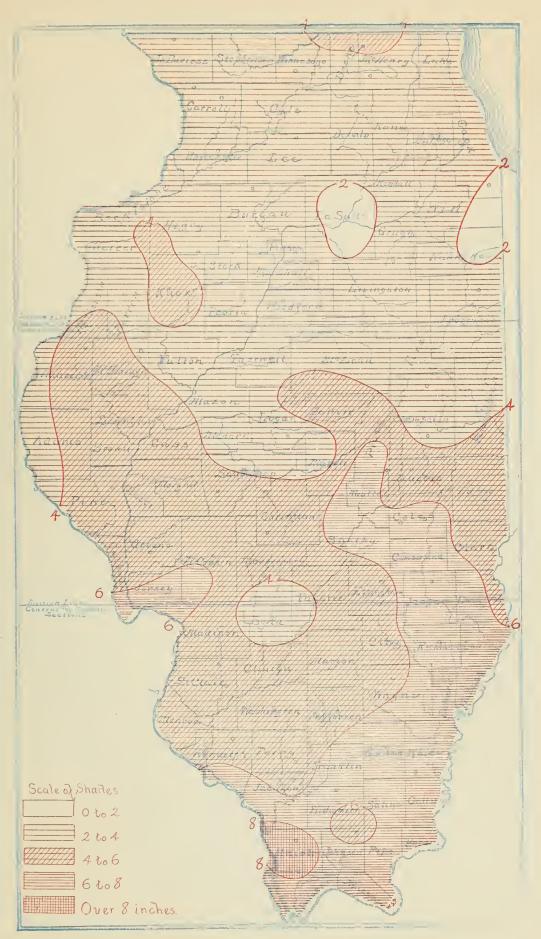
### Climatological data for April, 1897.

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Note,—Unless otherwise indicated the highest, lowest and mean temperature are from maximum and minimum thermometers. \*Highest and lowest temperature from observed readings. 1. Mean temperature from 7+2+9+9+4:2:8+8p+2:3:7a+7p+2:4:6a+6p+2:5:7a+2p+2:a. b, e, d. etc. number days missing. @. U. S. Weather Bureau Stations. +Same temperature occurred on more than one day. + Trace in precipitation column when amount is less than 0.01 of an inch.

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## Daily precipitation for April, 1897.

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REPORT FOR MAY, 1897.

## ILLINOIS SECTION

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# CLIMATE AND CROP SERVICE

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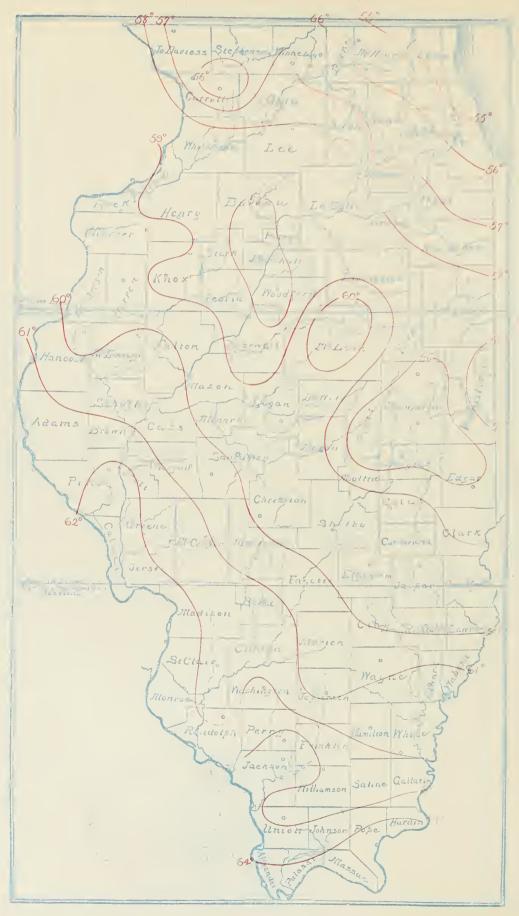
## WEATHER BUREAU.

WILLIS L. MOORE,

BY

CHARLES E. LINNEY,
OBSERVER AND SECTION DIRECTOR, CHICAGO, ILL.





U. S. DEPARTMENT OF AGRICULTURE,

## WEATHER BUREAU.

Central Office, Washington, D. C. WILLIS L. MOORE, Chief.

ILLINOIS SECTION, CHARLES E. LINNEY, Section Director, CHICAGO, ILL.

Vol. II.

CHICAGO, ILL.

No. 5.

A light yellow aurora was observed at Chemung on the 21st.

A haze approaching that of Indian summer prevailed in central counties on the 23d.

Fog was noted in the Fox River valley on the 5th, 23d, 25th and 26th; at Dubuque on the 1st, and at St. Louis 28th.

Mr. R. W. Burt, our voluntary observer and reporter at Atlanta, passed away on the 23d. Our service thereby looses a very valuable observer.

Lunar halos were commonly observed throughout the state on the 10th and 11th; solar halos on the 9th, 10th, 12th, 19th, 26th and 29th.

The chill in the air during the rain of the 2d caused it to turn to sleet in some of the eastern counties; sleet was noted at Danville, Palestine and Tuscola.

Thunderstorms were common over the state on the 2d, 8th, 9th, 11th, 13th, 20th, 22d and 27th, while scattered thunderstorms were noted on the 10th, 12th, 14th, 15th, 19th, 21st, 23d, 26th, 28th and 29th. Hail fell with the storms of the 2d, 8th, 9th, 13th, 14th and 15th.

Quite a number of our observers have paid the central office a visit during the past month. Among these we note Dr. M. M. Robbins of Aurora, Mr. R. A. Hawley, Round Grove, Mr. W. H. Johnson, Wheaton, Mr. Geo. W. Bunker, Martinton, and Prof. G. W. Horton, of Dwight. We are always pleased to have the observers call when in Chicago.

and second days were much below the general average. The degrees.

cool period on hand at the beginning of the month gave way to rising temperature on the afternoon of the 4th; a second cool period began on the 10th and continued until the 17th. and a third, beginning on the 23d, gave cool weather until the end of the month, the last day being exceptionally cool, with sharp frosts over all the northern and light frosts in the central section. Frosts were also general on the first day of the month, being heavy in northern and north-central sections and light in south-central and southern sections. The lowest temperature recorded within the state was 27° at Scales Mound on the 31st.

The warmth of the month came in two periods, the first from the 5th to the 9th, and the second from the 18th to the 22d. Maximum temperatures were recorded on various days in both periods, but the 7th was generally the day of highest temperature. The actual highest noted was 90° at Atwood on the 7th, at Olney on the 8th, and at Mascoutah on the 20th. This gives an extreme range in temperature of 63°, while the average of the greatest daily range was 37°.

There were four rain periods during the month, although the resulting rainfall was very light. Showers were general on the 2d and 3d; a second rain period began on the 8th and continued with scattered showers, until the 15th; a third began on the afternoon of the 19th and continued until the night of the 23d, and the fourth and last began on the 26th and ended on the morning of the 29th. The latter developed a number of severe local storms, with heavy rainfall, in a line of counties from Hancock, Adams, Pike and Calhoun southeastward to Jasper and Clay. The greatest intensity seems to have been felt in east Morgan and south Sangamon and Christian, where over 2.25 inches of rain fell on the 27th-28th. The greatest recorded in 24 hours during the month was 2.36 inches at Loami on the 27th. The greatest fall measured for the month was 4.09 inches at Morrisonville and the least 0.84 of an inch at Chicago. A slight flurry of snow fell at some of the stations with the rain on the morning of the second.

Rain fell on an average of 6 days, and there were 14 clear; 12 partly cloudy and 5 cloudy days during the month; a large percentage of sunshine considering the low temperature. The prevailing wind for the month was NW., with an average hourly velecity of 8.8 miles. Many other directions were reported at indivdual stations and in the northern section W, prevailed. The highest velocity recorded was 49 miles from the north at Chicago on the 2d. The air pressure of the month averaged 30.04 inches which is quite high for May; the highest noted was 30.56 inches at St. Louis on the 18th, the lowest 29.63 at Davenport on the 22d, and at Dubuque and Kishwaukee on the 23d.

Compared with previous years, the month was below any The temperature of the month of May averaged 2.6° be- former record since 1878 in rainfall, being 0.32 of an inch low the normal, and the rainfall 2.43 inches below, being below the dry May of 1891, and 0.45 of an inch below that lightest in northeast and heaviest in southeast counties. of 1895. In temperature '82, '83, '88, '91 and '92 were The month throughout was inclined to be cool, but the first cooler, May of 1882 touching the low average of 58.1

#### THE PROGRESS OF THE CROP SEASON.

Ситсадо, Мау 10, 1897.

The past week was a warm, dry and favorable one, temperature averaging from 2° to 8° above normal, and rainfall from a trace in northern counties to nearly an inch in some of the southern. Work was pushed rapidly in all parts, corn land, although rather rough and cloddy, being prepared very fast, and considerable planting was done, while most of the crop will go in this week; gardening and early potato planting were finished. Oats, spring wheat, the little remaining winter wheat, rye, meadows, pastures and fruits, except peaches, are doing well; rye is heading in the central section, wheat in the southern. Potato bugs have appeared in large number, also chinch bugs in the southern section; buffalo gnats are disappearing. Strawberries and early garden truck are being marketed in the southern counties.

CHICAGO, MAY 17, 1897.

The temperature of the week averaged from slightly above normal in northeast counties to more than 3° below in the southern section; rainfall from a quarter to a half normal, being greatest in the central part of the southern section. The light frosts on Saturday and Sunday did no damage. The week was generally favorable for work, and considerable corn was planted but the work was slow on account of the rough, cloddy soil on upland and heavy soil on low land; plowing and planting continue, with one-third of the crop to go in yet. Early planted corn is coming up, generally with a good stand; early garden and potatoes made a slow growth; oats, spring wheat, the little remaining winter wheat, rye and grasses are generally doing well, wheat and rye heading; chinch and potato bugs are developing in large numbers. Fruits are very promising, except peaches in the central and northern section; strawberries are being marketed in the southern.

### CHICAGO, MAY 24, 1897.

The temperature of the past week averaged from normal in extreme south to about 3° above in central counties, and rainfall from a sprinkle in southwest to more than an inch of rain in northwest. The week was generally favorable for work and much was done; corn is mostly planted and early fields are up with good stand; cultivation has begun in southern counties. Oats, spring wheat, rye and the little remaining winter wheat are growing slowly, and some are still plowing up small grain to plant corn; chinch bugs are numerous. Gardens and potatoes did fairly well and garden truck is plentiful in southern counties; strawberries are being marketed in large quantities; other fruit prospects promising, although much dropping is reported. Sweet potatoes and tobacco are being set out in southern counties and millet sowing has begun.

### Снісадо, Мау 31, 1897.

The past week was cool, cloudy and generally unfavorable although considerable work was done. Temperature averaged from 5° to 8° daily below normal and rainfall from nothing in extreme north counties to more than two inches in Morgan, being much scattered and local in character. Corn planting is about ended, although a little replanting is being done, but generally cultivators are running, with land rather hard and weedy, and weather too cold for good growth. Oats, pastures and meadows are generally doing well; gardens and potatoes growing slowly; wheat heading short and full of cheat; fruit still very promising and apaprently unharmed by the light frosts of the week, although

tender vegetables were slightly nipped in north counties. Chinch bugs are not so active owing to the cold; potato bugs still plentiful and troublesome.

#### OBSERVERS NOTES.

LANARK.—Ice as thick as a window pane formed on the 25th and 31st; grapes and cherries were frozen on the latter morning.

M. N. Wertz.

KNOXVILLE.—The month was too cool and dry for crops; corn is coming up unevenly; oats and spring wheat are at a stand-still; meadows and pastures doing fairly well.

C N Rutt

HILLSBORO.—Light frost reported on the morning of the 31st on low lands; frost and ice were also reported on the 29th, although I did not notice any on my high land.

P. J. Edwards.

Aurora.—The precipitation for May was the least of any May during the past 18 years, and 2.97 inches below normal. The frost of the 31st did much damage, but it was done in spots; not uniform.

M. M. Robbins.

FRIEND GROVE.—On the 1st of June coru planting is about finished; the stand is indifferent owing to cut worms, moles, poor seed and birds; oats looking nice; wheat lost a few points at the middle of May.

V. E. Majors.

Scales Mound.—Frost again this morning (June 1st); yesterday morning heavy frost with ice along the creek banks, white oak trees are black now on low lands; grapes and all tender plants are gone.

Joseph Vipond.

RILEY.—On the 31st frost injured tender vegetation in exposed places. The mean temperature of the month was 0.6° below and precipitation 2.55 inches below normal of 36 years. May in '70, '77, and '87 was drier.

John West James.

KISHWAUKEE.—About half of the farmers are cultivating corn; some replanting has been done owing to cold weather and weak seed; oats look well; rye in this vicinity never looked better, with exception of late sown; clover and timothy look light; frost of 31st did not cause much damage on high ground, ice formed.

Geo. Stevens.

### Barometer and Wind Table.

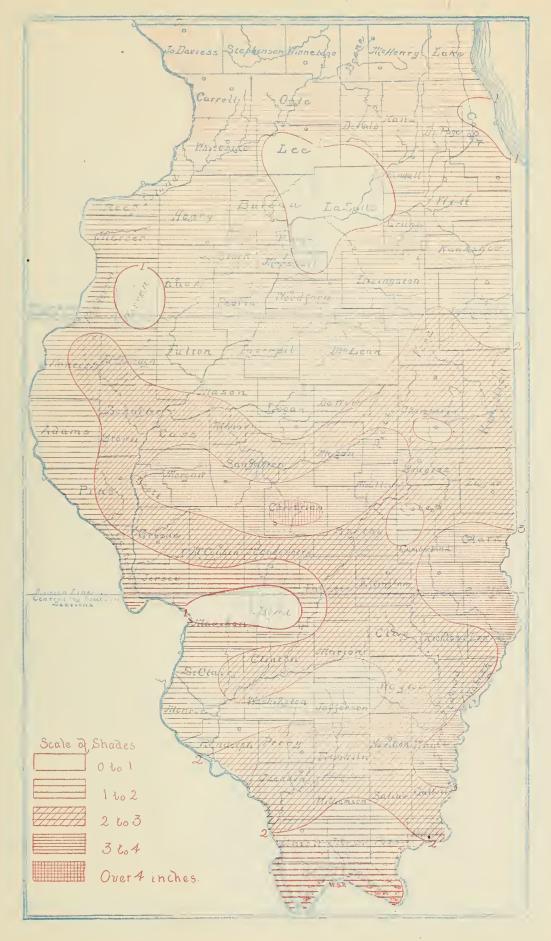
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Note,—Unless otherwise indicated the highest, lowest and mean temperature are from maximum and minimum thermometers. \*Highest and lowest temperature from observed readings. 1. Mean temperature from 7+2+9+9+4:2. 8 a + 8 p  $\div$  2: 3. 7 a + 7 p  $\div$  2: 4. 6a + 6 p  $\div$  2: 5. 7 a + 2 p  $\div$  2. a. b, c, d, etc. number days missing 6. U. S. Weather Bureau Stations. †Same temperature occurred on more than one day. † Trace in precipitation column when amount is less than 0.01 of an inch.

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### Daily precipitation for May, 1897.

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<sup>+&#</sup>x27;Frace. when precipitation is less than o.o. of an inch. a, b, e, d, etc. number days missing.

U. S. DEPARTMENT OF AGRICULTURE.

REPORT FOR JUNE, 1897.

## ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

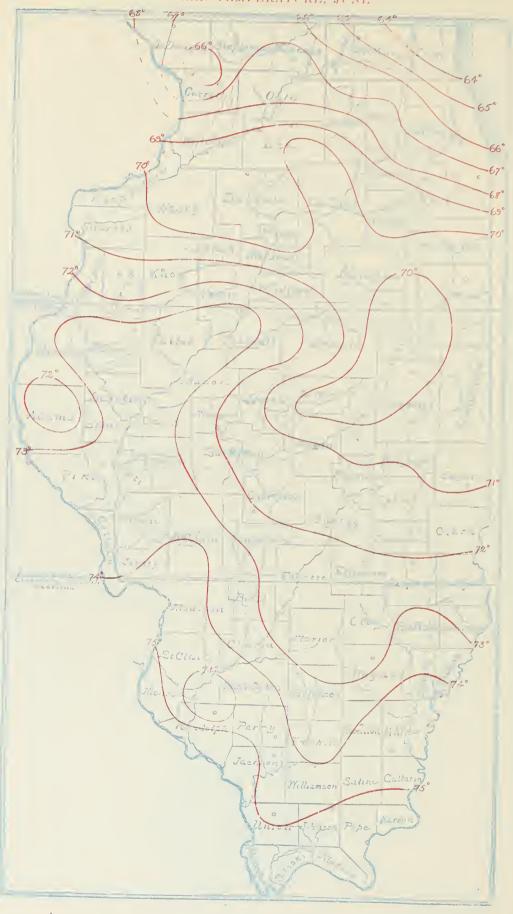
## WEATHER BUREAU.

WILLIS L. MOORE,

BY

CHARLES E. LINNEY,
OBSERVER AND SECTION DIRECTOR, CHICAGO, ILL.





U. S. DEPARTMENT OF AGRICULTURE,

## CLIMATE AND CROP SERVICE

OF THE

## WEATHER BUREAU.

Central Office, \ WASHINGTON, D. C.

WILLIS L. MOORE, Chief.

ILLINOIS SECTION,
CHARLES E. LINNEY, Section Director,
CHICAGO, ILL.

Vol. II.

CHICAGO, ILL.

No. 6.

Fog was noted at some of the northern stations on the 18th, 24th and 25th.

The soil temperature at Aurora average 67.1° at 6 a. m.; air temperature at the same hour 60.7°.

Faint aurora was observed at Chemung on the 7th and 29th, at Galva on the 19th and Kishwaukee on the 15th, 26th and 27th.

Solar halos were commonly observed on the 3th, 6th, 9th 14th, 18th, 19th, 20th, 21st, 22d, 23d, 24th, 25th, 26th, 28th and 30th, and lunar halos on the 6th and 23th.

A meteor was observed at Scales Mound on the 6th at 5 a.m. Its direction was NE. to SW., and the observer says it would have been a grand sight if it had appeared at night.

Thunderstorms occurred within the state on every day during June except the 1st, 4th, 7th, 8th, and 9th; being scattered showers continued until the next rain period which especially common from the 10th to the close of the month. Hail was reported at some of the stations on the 2d, 11th to 20th. 23d and 24th.

Quite a number of stations reported excessive rainfall, among them we note Aurora, 1.97 inches in 1 h. 25 m. on the 18th; Dixon, 2.80 inches in 7 h. on the 23d; Dwight, 1.40 inches in 40 m. on the 17th; Ft. Sheridan, 3.00 on the 16th-17th; Joilet, 3.36 inches on same dates; Kishwaukee, 2.51 inches in 15 h. on 23d; Ottawa, 3.57 on the 23d; Round Grove, 2.70 inches on the 17th; Sycamore, 2.83 inches from 4.27 a. m., to 6 p. m., on the 23d; Alexander, 2.95 inches by 9 a. m. on the 24th; Coatsburg, 1.04 inches in 30 m. on the 23d; Effingham, 2.50 inches on the 23d; Hannibal, 2.84 on 23d-24th; LaHarpe, 1.50 inches in one hour on the 23d and 2.25 inches in 1 h. 30 m. on the 30th; Loami, 2.23 inches in 13 h. on 24th-25th; Mt. Pułaski, 1.50 inches in 35 m. and 1.70 in 1 h. on the 30th; Philo, 1.80 inches in 50 m. on the 23d; Rantoul, 1.85 inches in 50 m. on same day; Cairo,

4.70 on the 22-23d; Chester, 2.95 inches on the 20th; Iron, 3.25 inches on the 23d; Mt. Vernon, 4.10 on the 22d of which 3 25 inches fell in three hours ending at 11.30 p. m.

The month of June proved to be nearly a normal one, although rather severe temperature extreme were experienced. The 1st, 4th, 7th, 8th and 9th were all cool days, the 1st and 7th giving exceptionally low temperatures throughout the northern section. Light frost was quite general over this section on the 7th and at a few stations on the 1st. A minumum temperature of 34° was noted at Chemung and Scales Mound on the 1st. Cool periods were experienced from the 1st to the 9th, the 20th and 21st, and 25th to the 27th.

Following the cool weather of the first 10 days the temperature rose rapidly and the 12th to 17th were very warm days, temperatures above 100° being commonly noted throughout the state, and particularly in northern section, where 102° was observed. A second short period of heat came on the 22d and 23d, and a third from the 28th to the end of the month, the 30th proving nearly as warm as the days during the great heat period from the 12th to the 17th. The highest temperature recorded within the state was 102° at Clear Creek and Minonk on the 14th; this gives an extreme range in temperature of 68° while the average of the greatest daily range was 32°. The temperature departure of the month was —0.2 of a degree.

The rainfall of the month largely came in thunder-showers covering very limited area, hence stations at neighboring points recorded widely different amounts. A showers period prevailed at the beginning of the month which continued until the 3rd, a second began on the 6th and continued until the 12th; a third began on the 14th and was general and heavy over the central and northern sections until the 19th; a fourth period began on the 22d and hung over the southern section of the state until the 25th, while scattered showers continued until the next rain period which set in on the 28th and continued to the end of the month, central counties receiving good showers. The rainfall table shows that showers occurred at some point within the state on every day during the month, although the average number of days with .01 of an inch or more rainfall was ten.

The greatest fall measured within the state was 9.10 inches at Chester, and the least 0.92 of an inch at Galva, a part of the state from Peoria northwestward receiving very little rain. The largest fall noted in any 24 hours was 4.70 inches at Cairo; a number of the stations reporting falls above 2.50 inches in 24 hours. The departure for the month was -0.03 of an inch, practically normal fall.

There were 8 clear days, 16 partly cloudy and 6 cloudy days during the month. The prevailing wind was SW., with an average hourly velocity of 8.7 miles, and a maximum velocity of 55 miles from the S. at Chicago on the 2d. The air pressure for the state averaged 29.97 inches; highest 30.28 inches at Oswego on the 26th, lowest 29.60 inches at Dubuque on the 2d.

#### THE PROGRESS OF THE CROP SEASON.

Chicago, June 7, 1897.

The temperature of the past week averaged from 4° to 9° daily below normal and rainfall from a tenth of an inch in northeast to over two inches in east and southeast counties; little damage resulted from the frosts. The week was far too cold for good corn growth but fields are being cultivated and the uneven places replanted. Oats, spring and winter wheat, rye and grasses are generally doing well, although corn on low lands was badly damaged by water. little winter wheat remains. Gardens and potatoes made slow growth. Clover cutting has begun and wheat cutting will begin in south counties next week. Fruits are in good condition; strawberries and cherries are plentiful on the highest which I have noted in any June in the past 17 years. markets.

CHICAGO, JUNE 14, 1897.

The temperature of the week averaged nearly normal, being first cold and then very warm, and the rainfall but light showers, increasing to a heavy local rainfall of over two inches in north Champaign and south Ford Counties. Rain is generally needed. The warmth was favorable to corn which is growing well, but has very uneven stand; cultivation is general. Oats are heading rather short and need rain, also pastures and meadows, clover cutting is progressing in the southern section with good yield, and winter cutting will begin this week, the latter shows some improve- except oats, and and all crops are growing finely. ment. Gardens and potatoes are generally good and vegetables are plentiful; fruits are still very promising and strawberries and cherries are abundant on the market.

CHICAGO, JUNE 21, 1897.

The temperature of the week averaged from 4° to 7° above normal, and several hot days were experienced. Rainfall came in thunder showers and ranged from light sprinkles in west and southwest counties to several times normal in north and east, being heaviest in south LaSalle and south Kendall. Corn has made excellent growth, but the stand is very uneven; oats are heading short and not promising; winter wheat and rye are being harvested in the southern section; clover cutting is well begun, with a good crop well saved; gardens and potatoes are generally needing rain in the drier counties. Fruits are excellent, raspberries, cherries and dew berries plentiful on the markets, blackberries and early peaches ripening.

CHICAGO, JUNE 28, 1897.

The temperature of the past week averaged from 2° to 4° below normal and rainfall from about normal in northeast and northwest counties to several times normal in central, southwest and south counties, the week being marked by heavy local thunderstorms. Corn, oats, gardens and potatoes, pastures and meadows have been much improved by the rains; cultivation of corn continues and early fields are being laid by; oats are heading rather short; winter wheat and rye harvest continues in the south half of the state. and clover cutting generally over the state, although rains have delayed the work. Wheat is giving a well filled head and fine berry, but little to cut. Fruits continue excellent, berries very plentiful, early apples and peaches coming to market in southern counties. Considerable damage was done throughout the state by lightning.

#### OBSERVERS NOTES.

Рипо.—On the 23d 1.85 inches of rain fell in 50 minutes. H. A. Burr.

Tiskilwa. - Lightning on the 17th killed five head of cattle in this vicinity. W. I. Greelev.

DANVILLE. - A severe wind storm here on the night of the 18th from 10.30 p.m. to midnight. R. W. Sharpe.

Albion.—The eastern sky on the mornings of the 23-24th was exceedingly red, almost like fire. E. W. Lester.

Iron.—Heavy thunderstorms on the 22d, 23d and 25th,

W. F. Hoskins.

Sycamore.—The temperature of the 14th (96°) was the Roswell Dow.

REYNOLDS.—Lightning struck a house on the 15th and a barn on the 23d, but little damage was done and no one was Thos, C. Lewis.

Mt. Vernon.—A remarkable electric storm occurred on the 22d accompanied by a deluge of rain, 3.25 inches falling during the three hours ending at 11.30 p.m.

Theo. P. Steele.

Louisville.—The month was rather dry until the 23d when good rains fell; it was a very favorable one for crops,

Belford A. Jenkins.

LANARK.—At the end of the month fully one-half of the clover hay is cut; corn is small as considerable had to be replanted on sod because of worms; hay crop light.

M. N. Wertz.

CLEAR CREEK.—The rain period from the 14th to the 18th gave us 5.10 inches of rainfall. About 10 miles north of here it was reported as 7 inches and 23 miles north as 9 inches, but 40 miles south only one inch. H. K. Smith.

Charleston.—On the evening of the 23d there was a very bright yellow cloud here, as if an aurora was present, which caused the ground and air to take on a yellow appearance. At the close of the month the corn crop looks fine; hay harvest began here on the 21st. Jacob B. Dazev.

### Barometer and Wind Table.

		Baro	mete	er.		1		Wind	1.	
Stations.	Mean.	Highest.	Date.	Lowest.	Date.	Total move- ment.	Average hour-	Miles.	tion, city	Date,
Bloomington ('airo ('hieago Davenport Dubuque Galva Ilamibal Keokuk Kishwaukee Minonk Olney Oswego	29.99 29.98 29.97 29.91 29.91 29.95 29.98 25.92 29.99 30.03 30.00 30.00	30.22 30.12 30.23 30.15 30.16 30.19 30.13 30.15 30.19 30.21 30.21	26 I I I 26 26 26 26 26 26 26 26	29.74 29.75 29.72 29.61 29.60 29.67 29.73 29.63 29.75 29.81 29.76 29.78	16 2 17 16 2 2 23 10 2 2 2	4,856 10,844 5,194 4,705 6,524 5,423	6.7 15.1 7.3 6.6 9.1 7.5	46 55 33 30 31 32	nw, s. e. nw.	19 2 17 23  24 19
Reynolds	30.00 29.98 29.95	30.13 30.17 30.15	9 16 26	29.83 29.75 29.71	2 22 16	6,260 6,473	8.7	38 31	w.	25 24
Averages	29.97	30.18		29.72		6,292	8.7			

## Climatological data for June, 1997.

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		1	ora,	Temp	erature.	in de	egree	s Fah	rent	reit.	Pro	ecipitati	on, in	inches.	H	Sky.		ectio	
Stations.	Counties.	on feet.	Length of reco	Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal	Greatest in 24 hours.	Total snowfall unmelted.  Number rainy	Number clear	Number partly cloudy days.	Number cloudy days.	Prevailing direction wind.	Observers.
NORTHERN SECTION. Ashton Aurora Cambridge Chemining Chemining Clilic AGO Clear Creek Davemport. Ia Dibuque, Ia Dibuque, Ia It. Sheridan Galva Hospital It. Sheridan Galva Hospital LaGrange Lanark Martinton Minonk Monmouth Oregon Oswego Ottawa Reynolds Riey Rockford Rockford Round Grove St. Charles Scales Mound Streator Sycamore Tiskilwa Walnut b. Wheaton Winnebago a. Zion	kane.	676 824 823 824 503 725 657 693 843 650 541 775 883 632 745 784 702 650 500 956 763 715 700 626 855 798 715 769	17 	07.0 69.8 64.4 65.1 70.4 70.4 99.8 70.4 99.4 09.2 70.1 66.2 70.5 66.0 66.2 71.0 66.2 67.6 70.8 70.8 70.8 70.8 70.8 70.9 66.0 66.0 66.0 71.0 66.0 66.0 66.0 70.0 70.0 66.0 66.0 66		98 98 94 98 97 94 101 94 96 96 98 98	14 14 14 13 17 14 14 14	41 52 36 35	1 1 4 1 1 1 4 4 4 7 7 7 7 1 1 7 7 4 8 7 7 8 1 S 4 4 7 7 1 1 1 7 7 1 1 1 1 3 1 1 1 1 1 1 1 1	37 31 33 40 34 30 39 33 40	3.69 6.41 6.70 6.04 . 3.34 4.94 . 4.22 4.70	+1.17	0.53 1.86 2.01 2.25 2.01 2.25 2.80 0.72 1.97 3.00 0.37 1.70 1.90 3.36 1.17 1.1,16 1.1,16 1.1,16 1.2,23 2.3 2.80 1.2,22 1.		6 2 3 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	17   27   27   27   27   27   27   27	15, 14, 14, 14, 14, 14, 14, 14, 14, 14, 14	nw. sw. sw. sw. sw. sw. sw. sw. sw. sw. s	Ira R. George. Dr.M., M. Robbins. S. B. Randall. Jos. Kuhles. Central Offlee. @ II. K. Smith. Geo. E. Hunt. @ Eustace Shaw. L. M. Tarr. @ Prof. G. W. Horton. Post Surgeon U. S. A. Prof. F. U. White. E. Ill. Hospital. F. M. Muhlig. C. N. Butt. Prof. F. E. Sanford M. N. Wertz. Geo. W. Bunker. O. M. Davison. D. J. Strang. Rev. A. P. Haten J. S. Seely Dr. J. O. Harris. Thos. C. Lewis. John West James. Hosmer C. Porter. R. A. Hawley. S. L. Adams. Joseph Vipond. R. Williams. Roswell Dow. W. I. Greeley. O. C. Nussle. Wm. II. Johnson. Frank Osborn. Robert McGrath.
Averages, CENTRAL SECTION. Alexander Atwood. Bloomington Bushnell Carlinville Carroliton Charleston Coatsburg Danville Decatur. Effingham Griggsville Hannibal, Mo. Ilavana Hillsboro Keokuk, Ia. Lallarpe Lexington Martinsville Mttoon Falestine Paris. Peoria Philo Rantonl Robinson Springfield Tuscola	Morgan. Pintt. *3. McLean McDonongh. McCoupin. Green Coles. Adams Vermillion. Macon Effingham Pike. Marion Mason Montgomery. Lee. Hancock. McLean Clark Coles. *1. Christian Logan.	. 670 . 665 . 853 . 660 . 720 . 763 . 470 . 650 . 534 . 475 . 661 . 370 . 800 . 575 . 544 . 638 . 685 . 600 . 519 . 600 . 600 . 711 . 768 . 600 . 600	5 25 100 116 41	73-3-3-67-4-17-72-2-74-17-72-2-77-71-8-72-2-77-73-8-73-8-73-8-73-8-73-8-73-8	0 +1.0 0 +1.4 0 +1.4 0 +1.4 0 +1.4 0 +1.4 0 +1.6 0	988 1000 1000 1000 1000 1000 1000 1000 1	3 18 18 19 14 17 17 17 17 17 17 17 17 17 17 17 17 17	43 42 44 43 8 52 45 44 45 44 48 48 48 49 45 56 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	444444444444444444444444444444444444444	30 41 30 41 31 4 25 3 33 3 33 3 31 4 27 4 33	4.55.8.17.18.18.19.19.19.19.19.19.19.19.19.19.19.19.19.	2	2.99 2.00 1.15 1.16 1.00 1.16 1.16 1.16 1.16 1.16 1.16	5 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	8 13 10 13 13 10 8 10 12	1 7 5 5 11 1 7 7 7 7 14 10 9 9 17 12 8 5 19 8 9 2 9 3 5 5	9 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 SW. 00 Se. 05 Se. 05 Se. 07 Sw. 07 Sw. 07 Sw. 07 Sw. 07 Sw. 08 Sw. 08 Sw. 09 Sw. 09 Sw. 01 Sw.	J. W. C. Gray. Prof. M. P. Lackland. Dan E. Zook. R. O. Purvlanee. Prof. Clyde Slone. Jacob B. Dazey. C. A. Murrah. Prof. R. W. Sharpe. Prof. J. H. Coonradt. Alfred Fitch. Emily R. Gray. E. H. Nimmo. @ Genl. J. M. Ruggles. P. J. Edwards. Fred Z. Gosewisch. Frank Campbell. D. F. Trimmer. J. B. Sheapley. Jos. Withington. Harry Grundy. Z. K. Wood. John E. Templeton. L. B. Myers. Dr. Fred Brendel. H. A. Burr. H. B. Clark. A. P. Woodworth. John Craig. @ E. W. Lester.
SOUTHERN SECTION Albion Cairo cisne Cobden Friend Grove Go;conda Greenville Herrin Iron Louisville McLeansboro Mascoutah Mt. Vernon New Purnside Olney I'um Hill St. John St. Louis, Mo Averages	Edwards Alexander Wayne Union Wabash*4. Pope Bond Williamsov*i	531 359 616 666 560 500 635 436 513 456 480 402 577 487 577 487 500 456	26 18 18 18 18 18 18 18 18 18 18 18 18 18	75. 72. 74. 73. 73. 74. 73. 74. 74. 74. 75. 75. 75. 75. 75. 75. 75. 75	4	7 105 10	1000   10	7	55 56 57 77 14 14 77 79 92 22 33 99 77 79 66 66 68 88 66 66 66 79 79 79 79 79 79 79 79 79 79 79 79 79	9 2 3 3 4 4 4 3 5 5 9 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	6 6.8 7 4.4 1 4.6 5.5 33 3.5 35 3.5	77 +2 77 77 77 78 78 78 78 78 78 88 88 88 88 88 88 88 15 15 16 17 18	43 4	44 44 41 224 51 95 67 225 51 97 40 84 10 09 33 35 65 30 62 80	10 10 9 11 9 12 10 6 7 8 8 10 12 8 8 10 13 11 10 10	14 3 10 4 10 16 2 6 12 2 8 0 0 0 12 8 8 7 7 13 9 9 8 8	16 22 18 24 12 20 14 23 9 27 17 29 13 9 15 14 14 14 11 10 17	0 SW	. P. II. Smyth. W. V. John Buck. V. E. Majors. Jas. Hammons, Jr. Prof. M. S. Oudyn. D. R. Harrison. W. F. Hoskins. W. J. S. Catheart. Belford A. Jenkins. John Judd. Dr. G. Leibrock. Theo. P. Steele. George Harris. Victor E. Phillips. J. C. Chesney. Godfrey Knetzger. Dr. H. C. Frankenfield. @

Note.—Unless otherwise indicated the highest, lowest and mean temperature are from maximum and minimum thermometers. \*Highest and lowest temperature from observed readings. 1. Mean temperature from 7+2+9+9-4:2. 8+8p-2:3. 7a+7p-2:4. 6a+6p+2:5. 7a+2p-2:4. a. b. c. d. etc. number days missing from observed readings. 1. Mean temperature occurred on more than one day + Trace in precipitation column when amount is less than 0.01 of an inch.

24. 25. 23. 27. 23. 29. 30. 31. Monthly mean.	Min. Max. Min. Max. Min. Max. Min. Min. Min. Min. Min. Min. Min. Min	6.59  6.50	5.5 (2.5) (2	2.8.66 2.
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## Daily precipitation for June, 1897.

SMILLIONS 1. S.									٠,		171.6	or p						1897															
NORTHERN SIGTION.	Stations.																												1				rotal.
ABURDEL		1.	2.	3.	4.	5.	в.	7.	8.	9.	1	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	81.	
American	NORTHERN SECTION.											1										ĺ											
Cambridge	Ashton	+										+					1.00	. 59	10.	.24		+		1.07	+	+			+		+		3.07
Chemers	Cambridge	1 +	.53	.02	+				+	+					. 05			.32				7		. 45			1 +			+			5.31
Chear (Free No. 9	Chemung	10.	. 15				. 05		†		.48						•95		+	1.86				1.46		.OI			1.44				
Designation   1.0   1.	Clear Creek	+	+	.12			+ u8								- 35	2.25	2.00	.30	.20					2.00						.05	+		
Designation   1.0   1.	Dixon	+	. 27	CAT			0.4		OI		67				+		+	1.80	+ 53	. 27				2.80							+		
Fig.	Dubuque, Ia	.02		.09	• • • •		.12		10.	. 04	•01				†			.04 I.40	. 16	. 33	• • • •		.05	1.08	+	+			.06	. 36	+		
Giornecol	Ft. Sheridan		.20	10			•07				T						1.25	1.75	35		. 05			. 20	.12	. 25			.05	.02			4.41
Hospital	Glenwood		. 14				+										1.65	.41	.58	.40				.60							· 94		3.82
Knowlie. 66   1	Hospital	+									+								.60	.47													
Lamerico	Knovville	.62	+							.09	+							.18	+	. 04			+	.40				.05	+				2.35
Martinton	Lanark		.34		1	1			. 08	+	.08				.25		. 26	1.49	• 05	1.02				1.71					.30		+		
Manmonth	Martinton								+		+				†		. 10	.71	1.08	.68			+	1.54	•03				+				
ONNERS	Monmouth	. 04								. 04					. 03		+		1	. 13			.13	.68			.06	.05			. 19 .		2.00
Reynolds	Oswego	.04	.14	-30	т				10.		.01						.05	2.30	1.50			[		.88					+	†	+		
Rifer   1	Ottawa	.08	. 52													, 22	.05	1.23	.02	.20				. 45	.03			+			. 04		
Registron   1	Rilev	+	.10		+				+		. 56	.02				*0I	.08	•.39	1	1.23				.73		+			11.	+			3.23
SCHEPIGN	Round Grove		. 34	.02							. 19				.41			2.70	. 02	.14				1.07							. 14		5.27
Streamore																																	
Taskiwa. 69 9 1	Streator	+	.10							+							2.40	1.50	. 25				. 10	2.30							. 05		6.70
Michael	Tiskilwa	.05	. 19	t					10.						.26			1.46	. 20	+21				.90						+ 1	+		
Winnelsage	Walnut	+	.40								†	.25			+01	†	1.32	2, 21 •75	1.03					.63			.02			.07	+		
APPRINGE   CRITICAL SECTION	Winnebago	+	.10						+	+	- 54						1.04	.03	T	. 54	1			1.75						.10			4.70
Alexander	Averages	.03	.19	.04	+	.01	.03	.01	10.	†	.08	10.	.00	.00	.07	.09	.60	-91	.10	•45	+	+		1.10	10.	.01	+	***	.40	.02	.09		4.22
Atvood.																																	
Beardstown	Alexander		.02	.11											+	. 05	.20						-33	+	2.93	.08		.30	.11	+	- 37		4.52
Bloomington	Atwood Beardstown			.02			.72		.36				•4I •35				1 1		7			]	1	2.52	. 30				7	. 46	.10		3.75
Carliwlle.	Bloomington		. 22				• 35		• • • •	+			.12					.25	.04	+		••••		.65	.32				†		1.58		3.49
Charleston.	Carlinville		.05	.25			.04		+	+					Ħ			T					F 1		1.16	17		. 62	EX	+	-53		3.91
Coatsburg	Charleston		1.17	.98			. 26	. 06							.05			.00	.02					-77	01.			II.	.21	.01	2.18		
Decatur	Coatsburg		.12													. 03	+	.73	.02	.12			.64	1.04	1.78	. 05		. 26		+	.21		
Griggsville	Decatur	. 36					.08	.13					.04		.23		+	. 23	.81	+			.02	- 57		.34		.68	.10		.63		4.22
Hannibal, Mo.	Griggsville		. 38														1			20		- 1	0.7		2.04	42		20	0.0				
Hilsboro.	Hannibal Mo		.00	10.					+	+	+					+				.31	OF	1	2.84		. 00	.72	. 02	. 52	+	+	. 51		6.08
La Harpe.	Hillsboro		T	.91				.24					.04			7	I TI		1		1		. 31		1.23	. 05		- 38	+20:	. 03	• 431.	!	3.93
Lexington	La Harpe		.00							.02		.11	.02			. 16			. 54	. 15			.25	1.50	.30		. 55				2.25		
Matton   1, 1, 30	Lexington																	.03		.30				. 50							.10		
Morrisonville	Martinsville			1.30			. 15	1.25	'								.88	. 26		.23					I.00		.07			. 13	1.50		6.77
Mt. Pulaski.	Martioon		†	1.05			+	.40							+			. 15	. 05				20		1.00	.08		.12	- 26		. 08		
Paris		+	.13	+		• • • •		. 50		+	 †	• • • •	.46	• • • •	• 06	• • • •	+	• 50	. 29	.09	• • •		.02	+	.73	. 51		+	.14	+	1.75		4.17
Philo	Paris			1.27				1.30										• 59	50	•45					1.20				.09	. 07	. 05		5.60
Robinson	Philo		.36	.03			.45					.87	.07				.02	1.15	.29				+	2.19							.84		6.22
SOUTHERN SECTION.  Abbion	Rantoul	†	.09	-38	+		.09			†	+	1.98	. 06			+	t	1.35	.03 I.I2	.01			+	2.42	.10		+	+	.08	.04	.15		3.60
SOUTHERN SECTION.  Abbion	Springfield	†	.17	.18			.01			†			†			.60	†	•44	.05	.02			.22	• 53	1.17	. 25		.25	.08	+	.14		4.11
SOUTHERN SECTION.  Abbion	Averages	.OI	.03	.35	+	.00	.17	.25	10.	+	····	.10	.17	.00	.03	.06	.06	. 20	. 20	.12	+	.00	.26	• 59	.50	.12	.06	.20	. 12	.05	.67		4.05
Albion																																	
Carlyle	Albion		. 16	-35			.05	.80													.32		. 05	1.26	1.06	.10				.19			4.34
Chester	Carlyle		.29	.85	†		.12	.45						.03							.53	.02	3.28	.42	1.38	.27	Т	.05	.24				3.50
Cobden	Chester			• 57		• • • •	.85	64			†	• • •		.15		.22	.12.			Ť  ;	2.95		2.05	.25	1.00	2.15		. 10	.02	.26			9.00
Triend Grove	Cobden		.21	.27			•41	1 00				†								.25	.14		1.12	.19	.80	.24			.04				4.67
Greenville	Golconda		.16	.10			, 02	•90			†	+				····				.04	.87	†	.89	.45	.34	. 57		†	.25	.08	.85 .	•••	5.52 3.58
Herrin	Greenville		T	•95			.03	.04	• • • •	• • • • •					†	• • • •				†		76	•40	.70	. 25	.12	†	.27	.05		•53		3.37
Prof.	Herrin		.80				1.27						• • • •										1.67	.32	I . I I	.28		.08		4			5.45
Loulsville.	Jordans Grove	.31		.65			.76												+				3.25	.41	1.05	·33			.03			:::	6.12
Mascoutall 1,84 1,12	Louisville	• • • •	.01	.70			†	.40			1				1				.03	Τ.			. 06	.91	.97	•37		†	†	.21	.62 .		4.28
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Mascoutali		1.84	.41			.14	1.02				• • • •			.04						.02		.86		1.00		.13		.32	.30	.10 .		4.83
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Mt. Vernon		.71				.61	• • • •												1 . 1 2	. 7/1	• • • •	4.10	.70	.50	-56	• • • •		.06	.19			7.49
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Olney		.15	.51			.10	.69			t	+			. 07		+		.09					.83	.50	•34		†	.IO	.10	. So .		4.48
St. Louls, Mo	St. John.			.80 •47			.73	.12												.02	.09		.96	.60	1.13	1.07	.38	10.	.08	.II			4.51
State averages	St. Louis, Mo		+	1.21			.05	.09	+		1 +	†	.01		.02	.01	10.			.03	25		1.62	62	.50	.35		.50	.25	.35	.04 .	• • •	5.32
	State averages	.02	.19	.28	+	1	. 16	.15	.01	+	.03	.04	.03	+	.04	.66	.26	•43	. 25	.60.	.06	.01	•39	.80	.49	.14	.03	08	.10	.05	.31		4.57

Trace, when precipitation is less than o.o. of an inch. — a, b, c, d, etc. number days missing.

## U. S. DEPARTMENT OF AGRICULTURE.

REPORT FOR JULY 1897.

## ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

## WEATHER BUREAU.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE.

UNDER DIRECTION OF

## WILLIS L. MOORE

CHIEF OF WEATHER BUREAU

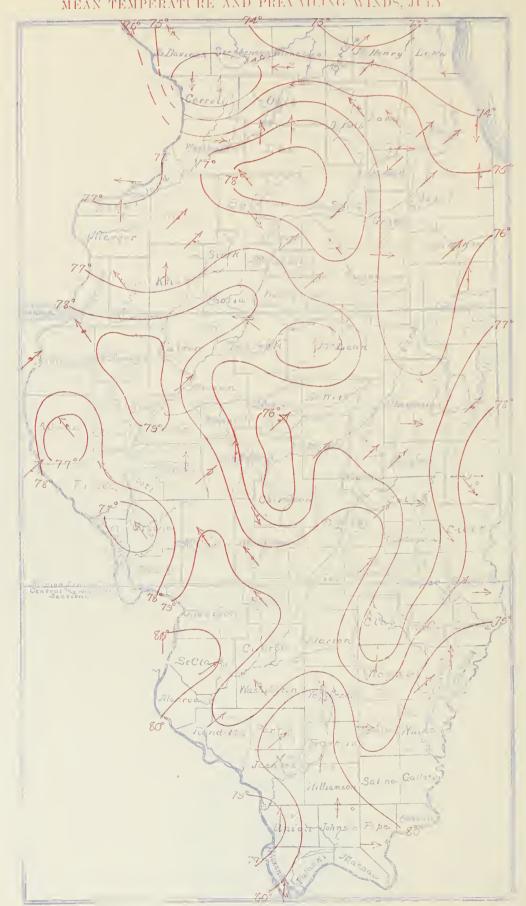
BY

CHARLES E. LINNEY,

OBSERVER AND SECTION DIRECTOR, CHICAGO, ILL.



Natural Wistory Survey



U. S. DEPARTMENT OF AGRICULTURE,

## AND CROP SERVICE

## WEATHER BUREAU.

Central Office, Washington, D. C. (WILLIS L. MOORE, Chief.

ILLINOIS SECTION, CHARLES E. LINNEY, Section Director, CHICAGO, ILL.

VOL. II.

CHICAGO, ILL.

NO. 7.

on the 2d, 14th, 23d and 24th.

Auroras were observed at northern stations on the 21st, 24th, 30th and 31st; that of the 21st being quite commonly seen.

A lunar rainbow was seen by our observer near Winnebago, at 9 p.m. on the 12th. This is a rare and interesting phenomenon.

Hail fell in small areas in the northern section on the 9th, 12th and 30th, near Keokuk in the central section on the 24th and on the 25th in the extreme south.

Thunderstorms occurred at some point within the state on each day except the 7th, 13th, 22d, 27th, 28th and 29th; the 2d, 4th, 9th, 10th, 15th, 20th, 24th and 25th were days of most frequent and severe storms.

Arrows to indicate the prevailing wind direction for the month will hereafter be given on the chart showing temperature lines on page 2, these will fly with the wind. Observers are requested to note carefully at the close of each day the prevailing direction for that day, if and possible write up the record of observations complete each day.

above normal, the great heat period the first ten days of the was SW, with an average hourly velocity of 7.6 miles; the month bringing up the general average. Two additional highest velocity recorded was 72 miles from the W. at heat periods were experienced, the second one from the 18th to the 23d and the third one from the 29th to the close of the month. The week from the 3d to the 10th was a very central counties showing much the highest pressure. The severe one on the farm animals throughout the state, many highest observed was 30.20 at Kishwaukee on the 18th and hundred horses perishing in the fields, and many men were overcome, a few dying from the effects of the heat. The highly favorable to farm work and the growth of crops 7th, 8th, 9th and 10th were all days of extreme heat, the 9th corn especially developing with marvelous rapidity. The probably most intense. Maximum temperatures of 100° or wheat, rye and barley harvest was finished in good order, and higher were very commonly reported during this period and oats harvest practically finished at the close of the month. 106° was noted at Atwood on the 9th and 104° at Minonk and Bloomington on the 8th, and at Paris on the 9th.

The first cool period of the month followed close upon the great heat wave, and during the early morning of the 13th the lowest temperatures of the month were quite generally recorded; the 12th, 13th, 14th and 15th all proving very cool days. A second cool period was experienced from the 25th to the 28th, during which time minimum temperatures below 65° were commonly recorded throughout the state. The actual lowest recorded was 48° at Scales Mound and Zion on the 13th. The extreme range of temperature was thus 56°, while the average of the greatest daily range was 31°.

The rainfall of the month averaged 0.44 of an inch above normal, although there were small parts of the state which received much less than normal fall. The showers were Lunar halos were observed on the 12th and 13th; solar very largely local thunderstorms hence the variation in the amounts measured at near stations. A shower period prevailed at the beginning of the month and continued (barring the 3d) to the 5th a second began on the 9th and continued with scattered showers, heavy in a few localities, until the 16th; a third of short duration swept over the state with general rain on the evening of the 19th and during the 20th; the fourth and last began on the 22d and continued until the night of the 26th. The last rain period gave the heaviest fall of rain and in the central and southern sections was of great benefit.

> The east and northeast counties were rather unfortunate throughout the month and closed the month with one to two inches deficiency, while west counties were fortunate and received more than twice normal rainfall. The greatest fall was 7.85 inches at Coatsburg, while just across the Mississippi at Hannibal 8.04 inches were measured; the least fall was 0.93 at Jordans Grove, near Houston P. O. in Randolph Co., which is closely followed by 0.99 at Ashton, Lee Co., the one in the south and the other in the north part of the state. The average for the state as a whole was 3.45 inches: the greatest reported in any 24 consecutive hours was 3.95 inches on the 25th at Cisne, over five inches falling during the entire storm, from the evening of the 24th to the middle of the day on the 26th.

The month was practically free from cloudy days, there were but 4, with 13 partly cloudy and 15 clear, while rain fell on an average of 8 days, the least report showing 4 and the The temperature of the month of July averaged 1.2° greatest 12. The prevailing wind direction for the month Chicago on the 5th.

> The air pressure of the state averaged 29.95 inches, the the lowest 29.53 at Reynolds on the 2d. The month was

> Note—The mean temperature of Martinsville on page ? should read 77.0, and of Cisne 77.2.

### THE PROGRESS OF THE CROP SEASON.

Chicago, July 5, 1897.

The temperature of the past week averaged from 4° to 10° above normal, being highest in north-central counties, and rainfall from nothing in the extreme south to over 2.50 in- effects of the heat on the 9th. ches in Montgomery County; good local showers prevailed rapidly, corn especially making wonderful growth, and in and died. the southern and central section is mostly laid by. Oats harvest has begun in the extreme south and the fields are showing sign of ripening over the entire state, the yield is fair but straw short; winter wheat and rye are being ent in the central section and stacked in the southern; clover cutting clover has been damaged by the rains. Gardens and late po- only fair. tatoes are doing well; millet sowing continues, and buckwheat sowing has begun; small fruits are plentiful, and fine, tree fruits very promising.

CHICAGO, JULY 12, 1897.

averaging from 5° to 10° daily above normal, and touching eral buildings were struck in the surrounding country. 100° nearly every day. Showers were very uneven and scattered, the average being less than normal, although central counties exceeded the normal. Many horses and a few men were overcome in the fields and work was done under great hazard. Corn continues its rapid growth and early fields are tasseling; outs have ripened up rapidly and cutting is well under way in the south half, with a fair yield and short straw; winter wheat and rye are generally in the on the 29th. The mean temperature of the month was 3.4 shock in central counties and rye and barley are being cut above normal, precipitation 1.91 below; the month in '68, in the north, the wheat giving good yield and fine berry; spring wheat is a failure; timothy having is in progress and the yield is fair to good; fruit continues plentiful.

CHICAGO, JULY 19, 1897.

We now off The temperature of the past week averaged from 3° below in northeast counties to 8° below in the extreme south, and rainfall generally light showers, but heavy rain fell in eastcentral counties. Crops made good growth and work was 7.30 a.m., sun was one-fifth covered at 8 a.m. one-fourth at pushed rapidly. Corn continues to make exceptional 8.28 a.m. one-third at 8.45 a.m. and clear of the shadow at growth and is tasseling and silking in early fields; oats are 9.47 a.m.; the darkness in the store was about equal to a ent in central counties and in early fields in north, with fair cloudy day. yield; but short straw; wheat, is being stacked or threshed, and rye and barley are generally in the stack; having is mostly done and the favorable week made it possible to save the crop in fine condition; pastures in some parts are needing rain, also gardens and potatoes; blackberries, raspberries, early apples, peaches, and plums are abundant and of fine quality.

· Chicago, June 26, 1897.

The temperature of the past week averaged from normal in extreme south to about 4° above normal in extreme north, and rainfall much above normal being heaviest (above 4.00 inches) in west Hancock Co. Crops have made good progress, corn especially, and fields are generally tasseling and silking, while early fields are approaching roasting ears. Oats are mostly cut and some threshing has been done with a fair yield generally; wheat threshing continues in central counties and rye in northern; having is practically finished; pastures and gardens have revived; broom corn, second-crop clover, millet and stock peas are growing finely; potatoes not so promising and somewhat damaged by bugs; fruits very plentiful and of fine quality; fall plowing begun.

#### OBSERVERS NOTES.

Dixon.—Hail on the 30th cut the corn badly four milenorth of Dixon. Eustace Shaw.

Ashton.—One man and several horses died from the Ira R. George.

KNOXVILLE.—The heat on the 8th, 9th, and 10th, was generally over the state. Crops have continued to advance very oppressive, some men and many horses were overcome

> Sycamore.—The mean temperature of the month was higher than any other during the past 17 years, excepting '87 only.

FRIEND GROVE.—Corn doing nicely but needing rain; continues and timothy has begun, with fair yield; much threshing about all done, quality of the wheat good, oats V. E. Majors.

> CISNE.—On the 25th we had a terrific thunderstorm with considerable wind from the southwest, 3.95 inches of rain fell from 2 a. m. to 8 a. m. W. H. Mix.

REYNOLDS.—Lightning struck in many places early morn-The past week was one of excessive heat the temperature ing of the 24th, two farmers had four cattle killed, and sev-

Thos. C. Lewis.

NEW BURNSIDE.—Thunderstorms on the night of the 24th and afternoon of the 25th did great damage to crops. especially corn on low lands; some stock was killed and one man near Vienna. Geo. Harris.

RILEY.—The partial eclipse of the sun was well seen here '71, '74, '86, '90 and '94 was drier. John West James.

Tuscola.—During the thunderstorm on the 10th a farm house near was struck by lightning, and Herman Hanley was killed while standing in his barn door near Long View. Many horses were overcome by the heat from the 3d to E. W. Lester.

RANTOUL—The eclipse began here on the 29th about H. B. Clark.

### Barometer and Wind Table.

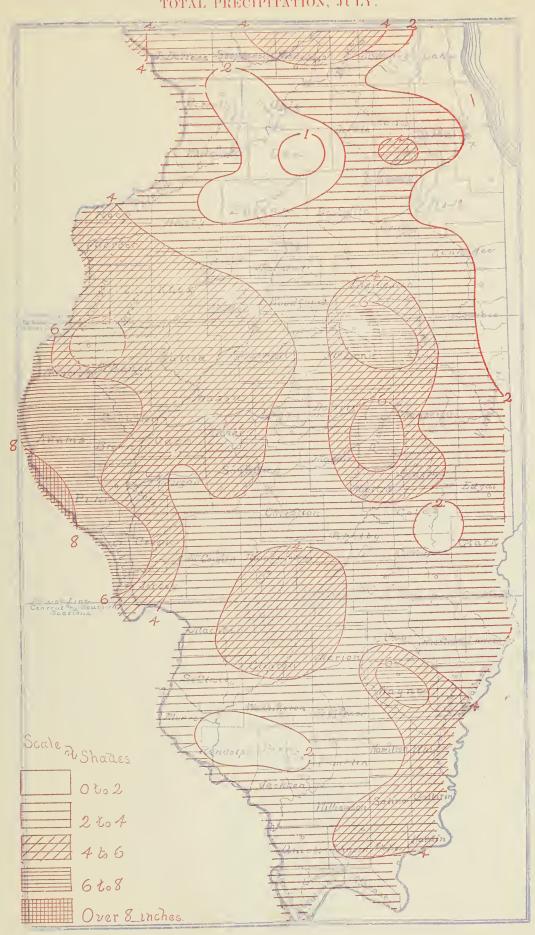
,										
1		Baro	met	er.				Wind	1.	
Stations.	Mean.	Highest.	Date.	Lowest.	· Date.	Total move- ment.	Average hour-	Max	imum city tion,	Date,
Bloomington Cairo Chicago Davenport Dubuque Galva	29.98 29.96 29.93 29.91 29.91	30.17 30.14 30.16 30.14 30.15 30.16	10 19 19 10	29.79 29.77 29.71 29.65 29.59 29.73	2 2 3 3 2	4,425 9,963 4,931 4,465	5.9 13.4 6.6 5.9	29 72 26 28	se. w. w. nw.	9 5 21 9
Grayville Hannibal Keokuk Kishwaukee Minouk	29.97 29.93 29.99 293	30.13 30.13 30.20 30.12	18 18 18	29.72 29.66 29.79 29.74	3 2 2 2	5,393 4,579	7.2	36 37	sw. w.	20 23
Olney Oswego Reynolds Robinson,	29.93 29.95 30.01 29.90 29.97	30.10 30.19 30.14 30.11	18 18 18	29.86 29.86 29.86 29.86	2 2 2 12					
Rushville	29.96 29.94	30.14	18	29.76 29.73	2 2	6, 141 5, 631	8.3 7.6	28 30	nw.	24 10
Averages	29.95	30.15		29.72		5.054				1

						Clir	nato	logi	cal	data	for	July, 1	897.			***************************************	-0.0			
-			rd,	Tem	peratur	e,in e	legre	es Fa	hren	heit.	Pı	recipitat	ion, in	inche	š.		Sky.		ion	(1)
		eet.	of recor		rom				, .	aily	٠,	rom	24	fall	rainy	clear	rtly s.	udy	ng direction	pe 6 (Marie Control 6
Stations.	Counties.	Elevation feet.	of r	40	Departure from the normal.	٠				~ <del>a</del> ~		uref nal	st in rs.	Total snowfal		r c ys.	r part	Number cloudy	ing d vind	Observers.
No. dee to the st	Agree & division on address to the division of the	evat	Length of year	Mean.	part he n	Highest.	Date.	Lowest.	Date.	Greatest range	Total.	Departure normal	Greatest in hours.	tal si	Number	Number days.	Number cloudy c	mbe	Prevailing win	, b, .
		ĕ	Lei	Me	De · t	Hig	. Da	Lo	Da	Gre	Tol	Del	Gre	Tot	Na	Nu	Nu	Nu	Pre	
NORTHERN SECTION.	Lee*1	.620		~~ 0		100	0.4						0							1 2 2
Ashton Aurora Cambridge	Kane	576 524	17	75-5	+2.4	94 97	8t 8t 8t	59 49 54	14 13	37 25.	0.99 4.29 2.41	+1.26	1.75		10 8 6	16 21 10	14 8 21	2 0	s. sw.	Ira R.George. W. Holden. S. B. Randall.
Chemung	McHeury	823	26	72.8 74.2	+2,2		8 3†	49	14	31	4.73	-1.94	1.38		. 11	14	12	5 3	SW.	Jos. Kuhles. Central Office. @
Clear Creek Davenport, Ia	Putnam	503 613		76.7 77.4	+2.3	101	31	49° 54	13	. 37 26	2.92 3.21	-0.51	2.15		6	14	8	9 8	sw.	II. K. Smith. Geo. E. Hint. @
Dixou	Dubuque	725	24	76.0	+1.7	98	9	53 55	13	34	1.97	+0.66			12	18	5	, 3	s. nw.	Eustace Shaw. L. M. Tarr. @
Dwight Ft. Sheridan	Lake		8	73.2		95	31	50	131	36 32	2.50		0:35		7	15	.14	2	e.	Prof. G. W. Horton. Post Surgeon U. S. A.
Galva				, 0 ,		93	9 9 8	52	13 12 29	33 28 40	2.15	+0.36			6 8	18	20	2 2	sw.	Prof. F. U. White. E. Ill. Hospital.
Knoxville LaGrauge	Knox*			76.3		97	9 8	55 53 52	13	30 29	1.59 4.45 2.47	+0.77	0.58 1.83		6 5	19 13 16	9 15 12	3 3	sw. s. sw.	F. M. Muhlig. C. N. Butt. Prof. F. E. Sanford
Lanark Martinton	Carroll*1	883		72.5		98	91	50 51	28 14	36	1.06		0.40		6 9	16	14	3 1 8	s. s.	M. N. Wertz. Geo. W. Bunker.
Minonk		745 784	15	76.4			8 8†	51 53	13	34 36	2.93 5.26		0.90		10	14	17 12	0 3	sw.	O. M. Davison. D. J. Strang.
OregonOswego.	Keudall*1	702 650	- i6	75-3-			81	56				+0.22			8	15		5	ne.	Rev. A. P. Haten J. S. Seety Dr. J. O. Harris.
Reynolds		500 800			+3.0	99	9 9 8†	54 52	13	34 30.	2.99	-0.55 +0.55	2.2I		9	18	7	6 5 6	sw.	Thos. C. Lewis.
	Winnebago	703	36	74.4	+3.4	95	9	51	13	9 38	3.05	-1.91			8	11	6		sw,	John West James. Hosmer C. Porter. R. A. Hawley.
	Kane*1	7,00	ļ ( . <del></del>	76. I		90	9	58 48	121	36.	3.41	10000000	11.17		8	25 18 - 4	13	0 0 8	se.	S. L. Adams. Joseph Vipond.
Streator	LaSalle De Kalb	6'26 855		77.4	+3.4		8	58	7	38	3103	-0.58	3 " -		7 8	17	12.	3	se.	R. Williams. Roswell Dow.
Tiskilwa	Bureau*3	- 798		76.3			8 9	61 50.	12	41	2.38	-1.88			5	20 18	7	4		W. I. Greeley. O. C. Nussle. (*) Wm. H. Johnson.
Wheaton	Winnebago . 1	769	1. 8	74.2		97	9	51	12	30	3.82	+0.04	.1.15		7 9	18	15	0.	e,	Frank Osborn.
Averages,	Carroll				(1) [4.66.66.68]		91	.48 53	13	35	2.22		1.20		6 8	19 1 <u>6</u>	7	5 3	sw.	Robert McGrath,
Alexander	Morgan	670		-8 6		103	8	53	13	35	2.41		0.95		0	10-		. 0	s.	George II. Hall.
		665		73.4		100	. 9	50	13	35	- (-		2.14		8 '	11	5 12	15	sw.	J. W. C. Gray. Prof. M. P. Lackland.
Bushnell	McCoupin	662		79.0		102	81	49. 54	15	40	4.68 3.33		1.27		^ 8 8	18	13	0	se.	Dan E. Zook. R. O. Purviance.
Carrollton		. 720.	*****	78.7	* * * * * * * *		9t 8t	60. 54	14	23	1.96	+3.17 =0.44	3.07		7 7	18	18.	3	sc. w.	Prof. Clyde Slone: Jacob B. Dazey.
Coatsburg Danville	Vermillion	1	· · · · ·	77.8		101	. 8	53 51	13	26 34	7.85	• • • • • • • • • • • • • • • • • • • •	0.57		9	16	7	5	se.	C. A. Murrah. Prof. R. W. Sharpe.
Decatur Effingham Griggsville	Maeon Effiingham Pike	. 690		78.0		98	9· 8†	52 55	13	34 28	3.03 - 2.11 4.50		0.55		7	18	18	2	sw. sw. se.	Prof. J. H. Coonradt. Alfred Fitch.
Hannibal, Mo	Marion	534					9	55 56	13	27 26	8.04	+4.94			. 10	15	6	3	sw.	Emily R. Gray. E. H. Nimmo. @ Genl. J. M. Ruggles.
Hillshoro Keokuk, Ia	Montgomery	676	1	78.0 78.3	+1.3	97 97	81	55 55	14	. 32 26	5.16	+2.65			10	20 17	7	4 3	SA. SW.	P. J. Edwards. Fred Z. Gosewisch.
La Harpe Lexington	Hancock McLean	700		78.6	+1.1	98	9	54	13	26 34	3.87 6.38		1.75		5 8	10	20 .	8	se,	Frank Campbell. D. F. Trimmer
Mattoon	Clark*r			.78.I	+2.2	96 95	9	55 55	15 13	27_	2.30	+0-46	2/12	X	4	15	10 12	5-4	nw.	J. B. Sheapley. Jos. Withington.
	Christian Logan	685	8,	75.8	ر دوسته		6† 9†	53 51.	.13	27	3.50	- x 86.	1.37		19.	13	17	I,	nw. sw.	Harry Grundy. Z. K. Wood, John E. Templeton.
Paris	Edgar		41	76.4 -78.4 79.2	+0.6	. 7	10-	55 52 53	13 13 13	32 34 30	2.70	-0.86- +0.68	1.17		5 5 9	20 16	4 14	7	nw.	L. B. Myers: Dr. Fred Brendel.
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Averages	St. Louis	571	26	80.6	+2.0	97	8†	02	13	22	3.23	-0.32	I.48 I.43		9 8	17	0 12	5 4	s. s.	Dr. H. C. Frankenfield.@
Averages for the	state	• • • • • •	21	77.0	+1.2			54			3.45	to.44			8	15	12	4	sw.	

Note,—Unless otherwise indicated the highest lowest and mean temperature are from maximum and minimum thermometers. \*Highest and lowest temperature from observed readings. 1. Mean temperature from 7+2+9+9+4:2. 8a+8p+2:3. 7a+7p+2:4. 6a+6p+2:5. 7a+2p+2. a. b, c, d, etc. number days missing @. U. S. Weather Bureau Stations. \*Same temperature occurred on more than one day - 1 Trace in precipitation column when amount is less than 0.01 of an inch.

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### Daily precipitation for July, 1897.

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Robinson	.02						• • • •			+	.81		+1		†	.62 .				. 25				+	.00	+ .						2.79
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Trace when precipitation is less than o.or of an inch. a, b, c, d, etc. number days missing.

## U. S. DEPARTMENT OF AGRICULTURE.

REPORT FOR AUGUST, 1897.

## ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

## WEATHER BUREAU.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE.

UNDER DIRECTION OF

## WILLIS L. MOORE

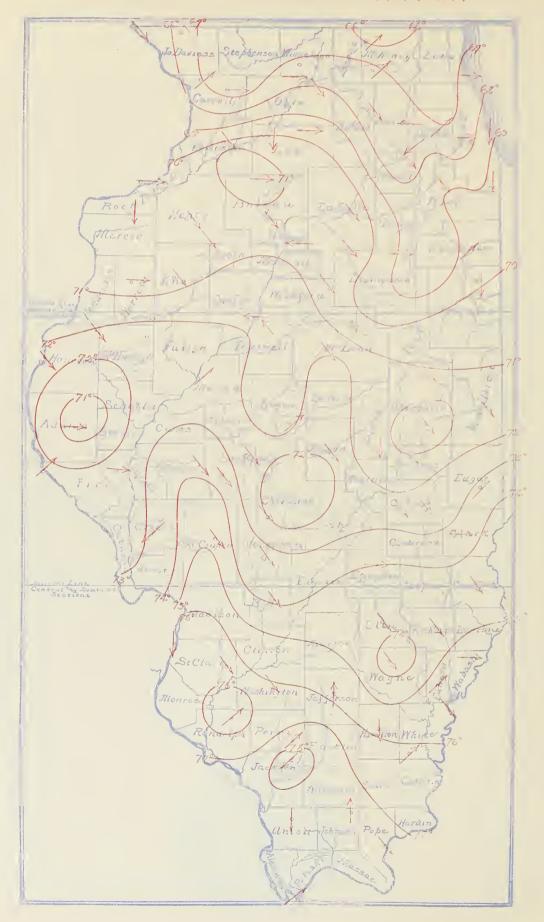
CHIEF OF WEATHER BUREAU

 ${\rm BY}$ 

CHARLES E. LINNEY,

OBSERVER AND SECTION DIRECTOR, CHICAGO, ILL.





U. S. DEPARTMENT OF AGRICULTURE,

## AND CROP SERVICE

OF THE

## WEATHER BUREAU.

Central Office, WASHINGTON, D. C. WILLIS L. MOORE, Chief.

## ILLINOIS SECTION, CHARLES E. LINNEY, Section Director,

CHICAGO, ILL.

NO. 8.

VOL. II.

CHICAGO, ILL.

Dr. J. R. Lambert is the new observer to succeed Mr. C. A. Murrah at Coatsburg.

The cloud charts which were sent to the observers the first of the month are generally much admired.

Lunar halos were observed on the 2d, 5th, 7th and 13th; solar on the 5th, 7th, 13th, 18th, 28th, 29th and 30th.

The elevation table on page 5 has been carefully revised and it is thought the correct elevation is now given for each station.

In the northern section small fog banks were noted on the 3d, 18th, 20th, 21st, 22d, and 25th, and in the central section on the 18th and 23d.

The minimum temperature of the past month was 1° below that of '96 and 2° below that of '94, both of which were considered very low and occurred later in the month.

Thunderstorms were noted at some point within the state each day except the 6th, 7th, 8th, 11th, 12th, 13th, 16th, 17th, 26th, 27th and 31st; the 2d, 4th, 9th, 22d, 24th, and 28th were days of most frequent storms. Hail fell over a small area in northeast counties on the 9th.

The month of August was one of marked extremes in temperature, and great dryness; a minimum of 36° was recorded at Lanark on the 20th, and a maximum of 108° at Mt. Vernon on the 4th, giving an extreme range of 72°. The average temperature of the month  $(71.7^{\circ})$  was  $1.5^{\circ}$  below the normal.

The month began with great heat, the average temperature of the first three days of the month was 83°, and maximum temperatures above 100° were reported in all parts of the state, the central and southern sections, particularly, experienced unusually high readings. Relief came throughout the north part of the state on the evening of the 3d state, the combined coolness and dryness checked corn, pobut in the southern section was delayed until the 4th.

Following the first heat period little change in temperathe preparation of the soil for seeding.

ture was experienced until the 16th when much cooler weather appeared, culminating in the very low temperatures recorded on the morning of the 20th, when light frost prevailed over the northern section, and in the central as far south as central Champaign and Vermillion Counties. Little or no damage resulted from the frost, and the cool weather continued, with slight variation, until the 26th, when a sudden rise was felt. This second warm period continued until the evening of the 29th, and the days were warm until the close of the mouth, although the nights were cool, giving an unusually large daily range in temperature, that of the 30th averaging 28° for the state as a whole.

The rainfall of the month was very light, amounting to only 1.12 inches, 1.89 inches below the normal. Less rainfall for the month of August was recorded but twice in 20 years, the first record, 1.04 inches, was made in 1881, the second record, 0.98 of an inch, was made in 1893.

Five showers periods passed over the state during the month, the first began on the 1st and continued, in the southern section, until the 6th, good showers falling generally over the central and northern sections on the 4th; a second brief shower period came on the 9th-10th, but little or no rain fell in the central section: a third period began on the 14th and continued until the 19th, again mostly in the northern section; a fourth began on the 21st and continued until the 24th, the 22d proving the day of most frequent showers in the southern and central sections, and the 24th in the northern; the fifth and last shower period began on the 28th and continued until the 30th, with very light scattered showers. What rain fell during the month came mostly with thundershowers of very limited area, and neighboring station report widely different amounts.

The area of most marked dryness is a narrow strip running northeastward from St. Clair and north Randolph Counties and enlarging to extend from Coles to Wabash in the eastern part of the state, within which area less than a half inch of rain fell. The greatest fall recorded within the state was 2.79 inches at Aurora, and the least 0.01 of an inch at Carrollton and Palestine; the greatest fall in any 24 hours was 1.75 inches at LaHarpe on the 4th.

The sunshine of the month was very large, there were 16 days practically without clouds, 11 which were only partly cloudy and but 4 which were cloudy, while rain fell on an average of but 5 days. The prevailing wind direction of the month was NW., which probably accounts in part for the deficiency in temperature, although the sun shone most of the month. The average hourly velocity of the wind was 7.4 miles; the highest velocity was 56 miles from the N. E. at Chicago on the 1st. The average pressure of the air was 30.01 inches; highest 30.33 inches at Dubuque, Kishwaukee and Oswego on the 5th; lowest 29.70 at Chicago on the

The month was a trying one on the growing crops of the tatoes, pastures and fruits, and prevented fall plowing and

#### THE PROGRESS OF THE CROP SEASON.

Chicago, August 2, 1897.

The temperature of the past week averaged from 2° to 4° above normal and rainfall but light scattered showers; hail fell in some of the central counties and a tornado occurred in south Tazewell on Friday night, causing the loss of some property and life. Generally the week was favorable for work and rapid growth; corn continues to make rapid progress and the early fields are giving roasting ears, while late ones are tasseling. Oats are cut and considerable threshing has been done with fair yield and fine berry; rye, wheat and barley threshing is nearing completion; haying is done. Pastures and gardens are generally needing showers; second-crop clover and millet are doing well: plowing in central and southern counties was pushed rapidly.

### Chicago, August 9, 1897.

The temperature of the week averaged from nearly normal along the Lake shore to about 2° above over the state generally. Rainfall came in light scattered showers heaviest in central and west-central counties, falling off to an entire absence in southeast counties; corn continues to make splendid growth and all early fields are in roasting ear; late corn is tasseling and silking; early fields will be beyond frost injury by the 5th to 10th of Sept., and late by the 20th of Sept. to the 1st of Oct. Broomeorn in east-central counties is heading in early fields and cutting will begin by the 20th, with favorable prospect for a fair to good crop of good brush. Threshing of wheat, oats, and rye continues: plowing has progressed slowly; millet is generally ready to cut.

### Chicago, August 16, 1897.

The temperature of the past week averaged from 1° to 3° below normal and rainfall but light scattered showers; rain is generally needed. Corn continues in good condition generally, although a few upland and stubble fields are firing, aided by chinch bugs; cutting in early fields will begin from the 1st to the 5th of Sept. Threshing is being rapidly finished; second-crop clover and millet cutting has begun, with good yield of clover seed; broomcorn cutting will begin this week in early fields, with fair to good yield; plowing continues but is getting difficult; apples, peaches, plums and grapes are plentiful, the three latter ripening in central counties.

### Chicago, August 23, 1897.

The temperature of the past week averaged from 5° to 10° below normal, being coldest in west-central counties, with light frost on Friday morning in east counties as far south as Vermillion. Only light scattered showers fell, except in central counties, and rain is generally much needed for corn, late gardens, pastures and fall plowing. Corn still makes slow growth, but is not filling well and some fields are firing, aided by chinch bugs; broom-corn cutting began in east-central counties on the 18th; with fair to good yield, but late fields need rain; millet and second-crop clover cutting continues, also oats and wheat threshing, the latter mostly done; plowing has made slow progress, ground too dry.

### Сикадо, August 30, 1897.

The temperature was slightly below normal in northern counties, nearly normal in extreme southern counties and from two to four degrees above normal in central and south central counties. Only light scattered showers are reported and a good general rain is much needed in all sections of the state. In many counties the drought conditions are

becoming severe and crops will be shortened. But little plowing can be done at present. Corn continues to make slow growth, much is ripening prematurely, some early is now being cut and the dry weather and chinch bugs have damaged many fields. Potatoes are very poor and promise a short crop. Fruits and melons are abundant.

#### OBSERVERS NOTES.

HAVANA.—At the end of the month the Illinois River was 1.8 ft. above low water mark.

J. M. Ruggles.

CLEAR CREEK.—We had a very dry month; a little frost was noticed in places on the 20th.

H. K. Smith.

Winnebago.—The month ends very dry; corn needs fifteen days of warm weather; pastures dried up. Frank Osborn.

DWIGHT.—Frost was reported on the morning of the 20th, the minimum temperature in the city was 39°.

G. W. Horton.

New Burnside.—Very dry at the close of the month, wells getting dry and corn needing rain very badly.

Geo. Harris.

RANTOUL.—Light frost reported by a number of our citizens on the morning of the 20th, corn said to have been touched on low land.

H. B. Clark.

Knoxville.—At the end of the month pastures are turning brown and stock water is scarce; no plowing done for fall wheat, ground too dry.

C. N. Butt.

RILEY.—The mean temperature of August was 1.5° below normal, and precipitation 2.46 below; the month in '64. '81, '83, '89, and '93 was drier. The mean temperature of the summer (69.4°) was 0.4 above normal, and total precipitation (6.04) inches was 4.97 less than normal, and only '63, and '94 were drier.

John West James.

Oswego.—A severe storm passed over Oswego on the 9th, lasting from 2.30 to 3.00 p. m. It moved from west to east, very heavy thunder and lightning accompanied the storm and some hail; several buildings were unroofed and trees blown down; five miles east the hail was very large and did much damage to corn.

J. S. Seely.

#### Barometer and Wind Table.

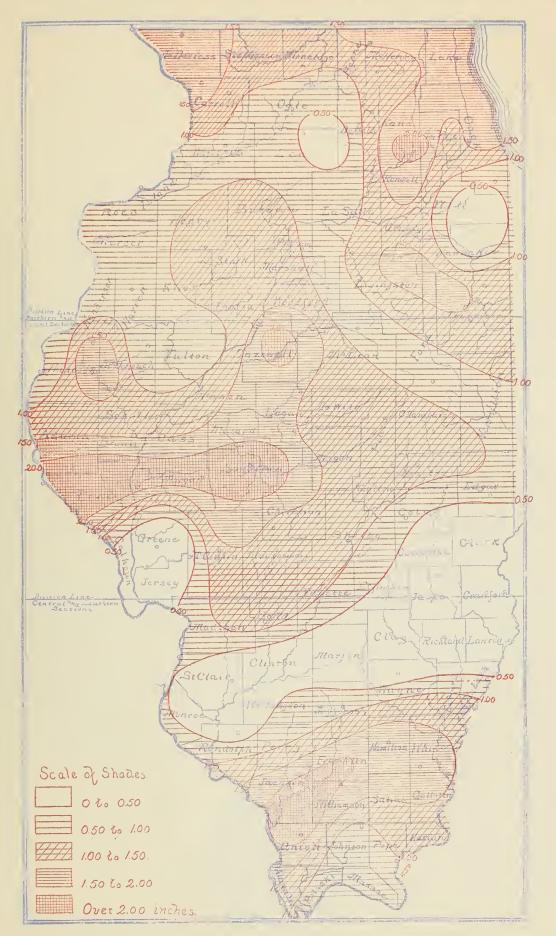
	-	Baro	omet	er.				Wind	l.	-=-;
Stations.	Mean.	Highest.	Date.	Lowest.	Date.	Total move- ment.	Average hour-	Max	Direc- tion.	
Bloomington. Cairo. Chicago. Davenport. Dubuque. Galva. Grayville. Hannibal. Keokuk. Kishwaukee. Minonk. Olney. Oswego. Revnolds.	30.03 29.99 29.99 29.98 29.99 30.01 30.04 30.00 30.05 29.99 30.03	30.32 30.20 30.31 30.33 30.31 30.26 30.28 30.29 30.33 30.27 30.25 30.33	5555556555555	29.83 29.84 29.70 29.76 29.73 29.80 29.78 29.87 29.82 29.78 29.78 29.86 29.86	15 10 15 20 15 15 24 24 26 15 26 24 26	4,104 11,209 4,431 4,383 4,780 4,232	5.5 15.1 6.0 5.9  6.4 5.7	33 56 30 28 24 34	w. ne, s. nw.	15 1 4 2
Robinson	29.99 30.01 30.00	30.30 30.25 30.27	29 5 5	29.81 29.84 29.79	24 26 26	5,872 5,203	7·9 7·0	30 24	sw. nw.	28 15
Averages	30.01	30.29	• • • •	29.80		5,514	7.4			

#### Climatological data for August. 1997.

					Cl	ima	tolog	gica	l da	ta fo	r Au	gust.	1897							
			rd,	Tem	perature	e,in d	egree	s Fa	hren	heit.	Pr	eelpltat	ion, in	inehe	8.		Sky.		tion	
Stations.	Counties.	Elevation feet.	Length of reco	Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal	Greatest in 24 hours.	Total snowfall unmelted.	Number rainy days.	Number clear days.	Number partly cloudy days.	Number cloudy days.	Prevailing direction wind.	Obsery <b>ers.</b>
NORTHERN SECTION. Ashton	Kane. Henry. Mellenry. Lake. Livingston I. Lake. Henry. Kankakee. Will. Winnebago. Knox. * Cook. Carroll. *1. Iroquois. Woodford. Warren. Kendall. *1. LaSalle. Rock Island. Mellenry. Winnebago. Knox. * Jo Daviess. LaSalle. De Kalb. Bureau. *3.	676 824 700 113 725 651 657 842 650 541 810 775 883 745 784 650 500 956 763 715 700 800 956 775 900 6 855 798 717	26 26 24 8 8 	67.9 70.1 69.0 70.6 69.0 69.0 69.2 60.2 60.4 60.5 60.4 60.5 60.4 70.5 70.6 60.4 70.5 70.6 60.4 70.5 70.6 60.4 70.5 70.6 60.7 60.6 70.5 70.6 60.7	-1.9 -2.0 -2.9 -1.8 -1.8 -1.9 -1.2		1 1 1 28 28 1 1 1 28 27 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	54 41 50 38 54 40 50 43 46 36 45 45 45 45 45 47 40 40 40 40 40 40 40 40 40 40 40 40 40	20 20 20 20 20 20 20 20 20 20 20 20 20 2	38 42 28 47 19 41 29 41 29 41 37 37 37 44 40 39 38 40 42 40 41 42 34 42 45 36 45 45 36 45 45 45 45 46 47 47 47 47 47 47 47 47 47 47 47 47 47	0.45 2.79 1.16 2.00 1.70 0.50 1.51 1.60 0.55 1.01 1.57 1.01 1.57 1.01 1.57 1.24 0.92 0.65 1.77 0.74 0.92 0.65 1.77 1.74 1.74 1.74 1.74 1.74 1.74 1.74	-0.57 -1.19 -2.78 -1.64 -2.34 -3.20 -1.43 -1.53 -2.73 -2.41 -3.15 -2.41 -3.15	0.40 0.83 0.55 0.41 0.166 0.48 0.67 0.89 0.25 0.30 0.25 0.30 0.25 0.30 0.25 0.30 0.25 0.30 0.25 0.30 0.25 0.30 0.25 0.30 0.25 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.3		8 8 7 11 7 8 7 5 5 8 8 7	14 14 14 14 14 16 13 12 13 15 15 15 14 17 15 15 15 15 15 15 15 15 15 15 15 15 15	16 15 22 8 8 13 15 10 8 8 8 13  5 9 12 12 12 12 13 16 11 11 12 12 10 11 11 12 11 11 11 11 11 11 11 11 11 11	1 2 3 3 10 6 6 3 8 8 4 6 6 3 3 8 8 2 2 4 4 4 1 1 4 0 0 3 3 8 8 5 5 6 6 6 1 7 7 0 0 3 2 2 2 1 1 1 6 6 4	W. ne. ne. ne. ne. ne. ne. ne. ne. ne. ne	Ira R. George. Dr. M. M. Robbins. S. B. Randall. Jos. Kuhles. Central Office. H. K. Smith. Geo. E. Hunt. @ Eustaee Shaw. L. M. Tarr. @ Prof. G. W. Horton. Post Surgeon U. S. A. Prof. F U. White. E. Ill. Hospital. F. M. Muhlig. Geo. Stevens. C. N. Butt. Prof. F. E. Sanford M. N. Wertz. Geo. W. Bunker. O. M. Davison. D. J. Strang. J. S. Seely. Dr. J. O. Harris. Thos. C. Lewis. John West James. Hosmer C. Porter. R. A. Hawley. S. L. Adams. Joseph Vipond. R. Williams. Roswell Dow. W. I. Greeley. O. C. Nussle. Wm. II. Johnson. Frank Osborn. Robert McGrath.
CENTRAL SECTION.  Alexander Atwood. Bloomington Bushnell Carlinville. Carrollton Charleston Coatsburg Danville Decatur Effingbam Griggsville Hannibal, Mo. Havana Hillsboro Keokuk, la. LaHarpe. Lexington Martinsville Mattoon Morrisonville Mt. Pulaski Palestine Paris. Peoria Pbilo Rantoul Robinson Springfield Tuscola	Morgan. *3.  Netean MeDonough. McCoupin Green Coles. Adams Vermillion. Maeon. Effingham Pike. Marion Mason Morgomery Lee. Hancock. I. McLean Clark coles. *Christian Logan Crawford Edgar Peoria. I. Champaign (hampaign tangond sangamon)	670 672 840 662 663 660 720 763 685 690 050 534 475 676 613 700 800 575 731 038 685 690 613 700 800 575 731 638 645 600 519 700 600 600 600 600 600 600 600 600 600	5 25	74.1 72.8 73.8 74.8 71.6 70.7 71.4 72.8 72.4 72.4 72.4 72.5 73.4 74.6 66.8 74.2 72.6 66.8 74.3 72.4 72.4 74.6 74.6 74.7 74.6 74.7 74.6 74.7 74.7	-2.0 -2.1 +0.3 -2.7 -0.8	99 100 101 100 93 98 93 99 100 100 97 95 94 99 97	2†	49  43 42 52 52 47 49 41 43 50 51 50 51 50 51 48 40	20 20 31 20 20 20 20 20 20 20 20 20 20 20 20 20	36 52 35 32 36 36 37 37 35 33 37 33 40 40 42 40 42 42 43 43 44 40 42 41 43 43	2.20 1.69 0.53 1.05 0.01 0.39 1.22 0.74 1.40 0.56 2.16 0.55 0.40 1.36 0.13 0.50 0.13 0.13 0.14 0.13 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14	-2.69 -3.61 -40.08 -1.34 -2.18 -1.41	1.12 1.00 0.82 0.48 0.92 0.01 0.13 0.66 0.85 0.30 0.77 0.13 0.61 0.20 0.25 0.25 0.25 0.25 0.25 0.25 0.25		5 4 4 5 2 5 5 1 7 7 5 5 4 4 4 3 3 3 3 3 1 5 5 5 5 1 4 4	15 16 14 12 19 19 19 12 20 4 22 21 15 21 17 17 17 17 22 28 21 16 16 16 16 16 16 16 16 16 1	12 5 16 12 12 15 10 17 7 7 16 8 9 14 9 7 2 3 3 5 11 11 15 7 7 7 7 8 8 7 7 8 1 1 1 1 1 1 1 1 1 1 1	3 12 3 0 0 0 0 4 1 1 10 2 1 2 0 0 3 4 4 2 2 3 0 6 6 5 5 7 1 2 2 0 0 5 4 4 6 6 2 2 5 5 3 3	nw. n-s. nw. nw. nw. nw. nw. nw. nw. nw. nw. nw	George H. Hall. J. W. C. Gray. Prof. M. P. Lackland. Dan E. Zook. R. O. Purviance. Prof. (lyde Slone, Jacob B. Dazey. C. A. Murrah. Prof. R. W. Sharpe. Prof. J. H. Coonradt. Alfred Fitch. Enily R. Gray. E. H. Nimmo. Genl. J. M. Ruggles. P. J. Edwards. Fred Z. Gosewisch. D. F. Trimmer. J. B. Sheapley. Jos. Withington, Harry Grundy. Z. K. Wood. John E. Templeton. Paul Huston, Jr. Dr. Fred Brendel. H. A. Burr. H. B. Clark. A. P. Woodworth. John Craig. E. W. Lester.
Albion. Cairo. Cairo. Cisne. Cobden. Friend Grove. Goiconda. Greenville Hierrin Iron. Louisville. McLeansboro. Mascoutah. Mt. Vernon. New Burnside. Olney. Plum Hill. St. John. St. Louis, Mo. Averages.	Alexander Wayne Union Wabash *4- Pope Bond Williamson* White Randolph Clay Hamilton St Clair *5- Jefferson Johns on Richland Washington Perry *1	500 635 456 436 500 480 462 571 511 500 487 550 450 571	9 27 14 9 10 26	73.5 73.0 75.3 74.3 75.6 76.6 76.6 76.3 76.2 77.9 76.8	+0.4 	104 102 100 106 101	3† 3† 3† 3† 4 3 1† 4 3 3 3 4 3 3 4 3 3 26	53 59 50 51 56 51 55 50 53 56 54 52 58 54 52 58 54 59 54 54	20 17 20 13 20 13 17 16 13 17 16 17 17 18 17 17	33 26 35 36 36 34 36 34 36 34 31 36 40 36 40 36 35 37	1.05 0.89 0.43 2.05 0.42 1.01 1.36  1.49 0.39 1.70 0.14 0.77 0.81 0.40 0.56 0.66 0.92 1.12	-1.95 -1.85 -3.71 -2.46 -3.62 -2.12 -4.07 -1.68 -1.89	0.23 0.23 0.24 0.68 0.52 		3 7	21 12 27 20 28 22 16  11 16 18 15 15 15 15 17 16	9 11 3 9 3 4 4 11  6 12 9 22 21 11 10 6 16 16 15 10 11	1 8 1 2 0 5 4 3 3 4 4 7 7 0 3 4 4 1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	sw. sw. nw. nw. nw. sw. sw. nw. nw. sw. nw. nw. s. nw. nw. nw. sw.	B. F. Michels. P. H. Smyth.@ W. H. Mix. John Buck. V. E. Majors. Jas. Hammons, Jr. Prof. M. S. Oudyn. D. R. Harrison. W. F. Hoskins. W. J. S. Catheart. Belford A. Jenkins. John Judd. Dr. G. Leibroek. Theo. P. Steele. George Harris. Victor E. Phillips. J. C. Chesney. Godfrey Knetzger. Dr. H. C. Frankenfield.@

Note,—Unless otherwise indicated the highest, lowest and mean temperature are from maximum and minimum thermometers. \*Highest and lowest temperature from observed readings, 1. Mean temperature from 7+2+9+9+4:2. 8+8+p+2:3. 7+7+20 and 7+7+20 and 7+7+20 and 7+7+30 and 7+7+30 are temperature occurred on more than one day at the Trace in precipitation column when amount is less than 0.01 of an lnch.

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### Daily precipitation for August, 1897.

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Aurora			.40	.33					.06					.05		1 1 1	. 07					. 15	.10				+				2.79
Chemung	. 02	1 .09	.07	. 29												+		.03					.05				.04			- 10	2.00
Clear Creek			. 16						• 55					+				+	+				. +					4			0.71
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Dubuque, Ia Dwight		1 +48		. 30				+	.20					. 34	+	+	+	.13	.05				7				+ )	.01			1.51
Ft Sheridan				. 53					.89					. 04				.06													1.52
GalvaGlenwood	.12			. 66					. 36					.01			. 03	. 02	.11		.04		.21				!	+			0.54
Hospital				+02										.03					.03		.OI		. 25					10.	.OT		0.36
Joliet Knoxville.				.93														. 04					. 04								I.OI
LaGrange	• 35	.07		. 10					• 53	• • •				11.				•04			• • • •	. 15	. 02				.45				1.57
Martinton			****	.12					1					.13	.12	2		.03	•49	12	.05	. 07	1					.15			1.28
Minonk Monmouth				•53				• • •	†				• • • •	+	+		. 06		.07				. 08					+			0.92
Oswego			.05	.10					1.00					.05	. 05		.03	.02					- 47								1.77
OttawaReynolds				.60					.17							+	.01	10.	.34				.11								0.74
Riley		. 02		.13					- 57					.14	+05		+	. 05					. 17				·II.	+			1.24
Rockford Round Grove			.22	.17					.10					. 05			. 02		.02				- 32				.04	.32	.05		0.90
St. Charles Scales Mound		1	.40	.40			••••		.23					.09	+08	07	+07	. 04	.05				.07	• • • •	• • • •		-17				1.67
Streator																			.30												1.53
Sycamore				81.					.16					-11	+07		+	.06	.07				. 4.5				+				1.06
Walnut				, 22					+3					.07				.05	.19				.80				+			'	1.48
Wheaton		.60		.05					.08					.07	-08		.03	.04					.10				•16				1.11
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CENTRAL SECTION.				07														4	00	l											
Alexander				1.010										-13					.12		. 44										2.20 1.69
Beardstown																															1.09
BloomingtonBushnellCarlinville		+	.48	.05										+			+		+	+	.02	†						. 03			0.53
Carlinville				+	-16	• • • •				• • • •		• • • •	• • • •	+25	• • • •				.13	92	• • • •	• • • •	+	• • • •				. 19			
Charleston				.06						. 05								.02	.05		.13						. 06				0.01
Coatsburg Danville				.60	. 03									.05	• • •				.11	15	• 33	• • • •	+					+ :			1.22
Decatur				.85										. 14				10.	†	40		+									0.74 I.40
East Peoria Effingham				1.75	···									.21			.32		+	18	• I 3		.12					-13	. 30		2.58
Griggsville				.76	62														7"										- 1		
Hannibal, Mo				.63	- 43	+								.12				-05		. 51	-59		.11	т							2.48 I.22
Hillsboro				.12	.09	+		• • • •	• • • •				• • • •	†	.01				.06	1 08	.61		•02	• • • •	• • • •		.12	+	.15		1.16
La Harpe		.09		* * ( .)																+02											0.65
Lexington				.70		+	••••							• 20					.13		1 13		.11	• • • •				+	• • • •		0.50
Martinsville																					. 25							+		1	0.25
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Palestine														0.2					10		20								.01	1	0.01
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PhiloRantoul				.25										.13		+	.02		+		.13		+					.05			0.58
Robinson				1.11				~					• • • •	. 20				+	.36	.06	1 00			• • • •				.09	- 25		0.41
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SOUTHERN SECTION.																			- 3		6-							06	-		
Albion					.18	,02	. 10.		.09	.06				.03	.03	01.		+	+		.22	.01									0.89
Carlyle	• • • •		• • • • •			11					••••		'		• • • •			10.		.02	75	• • • •	• • • •	• •	••••			08	.18		0.21
Cisne																			***		.08							.12	.23		0.43
Cobden	• • • •	• • • • •			.13	†	•••••	• • •	-54		• • • •	• • • • •		+	• • • •				• • • • • • • • • • • • • • • • • • • •		1.38		+	• • • •				8			2.05
Friend Grove					.68	+			+					+	•03						.18	.12	+		+						10.1
Grayville														11	.12						.66		+					+			0.78
Hallidayboro					.93										.77						.01										2.61
Ironk						.05			.06					.02	.05			.14			.70		.01				.13				0.49
Jordans Grove LoulsvilleMcLeansboro	• • • •				.01		• • • • , •		• • •			• • • •	• • • •	+	• • • •			+		.04	.15	• • • •					†	- 04	.15		0.39
Mascoutah					.13	.02			Т																				· 04		0.14
Mascoutah Mt. Vernon				• • • •	+		+ 1.	• • •		. 16	• • •			+	4.						. 40							+ .	.12		0.77
New Burnside Olney Plum Hill						.03			.10					+	1			+			.43	.10					+		.19		0.40
Plum Hill	• • • •			• • • •		.07		• • •			• • • •	• • • •	• • • •	+	. 28										• • • •	• • • •		.08	. 15		0.58
St. Johnst. Louis, Mo					.03	.06			.14					.06	.02		.06			+	.02					.16			.27		0.60
St. Louis, Mo	.00	.00	+00	• 00	+11	+02	+	.00	.04	.03	,00	.00	.00	.02	.13	+	+	.01	† .00	+	.40	.01	+	.00	+	.01	10.	.02	.10	.00	0.92
State averages	*OI	. 0,3	.03	. 28	•04	+	1	+	.11	10.	.00	.00	.00	.06	. 04	1	.02	.02	.05 .01	-04	.22	.01	. 081	†	1	1	.02	.02	.04	.00	1.12

REPORT-FOR SEPTEMBER, 1897.

### ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

# WEATHER BUREAU.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE.

UNDER DIRECTION OF

### WILLIS L. MOORE

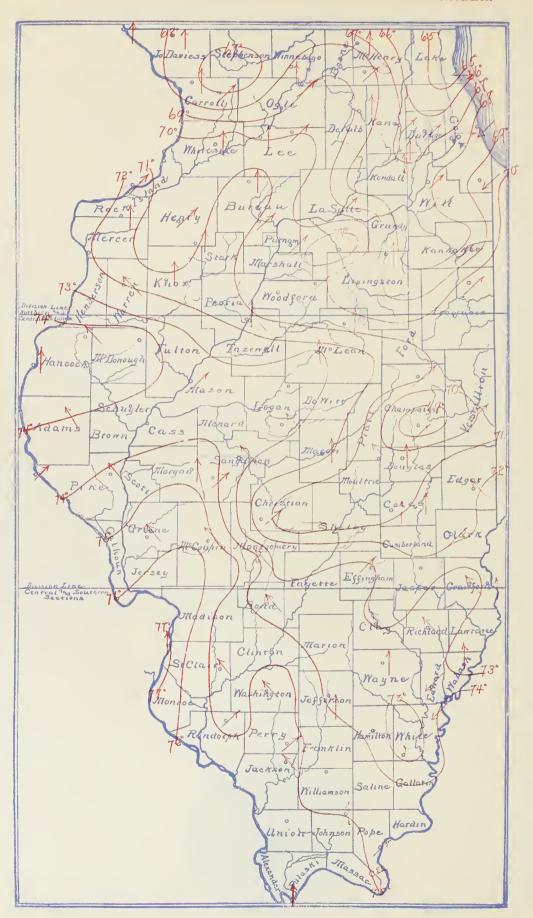
CHIEF OF WEATHER BUREAU

BY

CHARLES E. LINNEY,

OBSERVER AND SECTION DIRECTOR, CHICAGO, ILL.





## CLIMATE AND CROP SERVICE

OF THE

### WEATHER BUREAU.

Central Office, WASHINGTON, D. C.

WILLIS L. MOORE, Chief.

### ILLINOIS SECTION,

CHARLES E. LINNEY, Section Director, CHICAGO, ILL.

VOL. II.

CHICAGO, ILL.

NO. 9.

The period without frost at Riley is reported by Mr. James as 111 days.

A faint aurora was observed at Kishwaukee on the 7th, 8th and 9th, and at Chemung on the 11th and 13th.

Fog prevailed along the Fox River valley on the 12th and 24th, also light fog at Aurora on several other days.

Mr. J. F. Bogan is the new observer to succeed Mr. Theo. P. Steele at Mt. Vernon, who retires to his farm at Dahlgren.

Solar halos were observed in northern counties on the 6th, 14th, 21st, 24th, 26th, and 28th, in central counties on the 15th and 16th, and in southern counties on the 17th.

Thunderstorms prevailed over the state on the 1st, 2d, and 16th, also a few scattered storms on the 10th, 11th, and 24th, hail falling at one or two stations with the storms of the 1st and 16th.

While most of our observers have perfected the exposure of their thermometers so that their reading may be fully relied upon, a few still remain who should give more attention to this very important matter.

The month of September was an exceptionally warm one, the temperature averaged 5.6° above the normal and exceeded any previous record for the month, although the month in '81 was but one-tenth of a degree below; '84, and '95 also had very warm Septembers. Warm weather prevailed at the begining of the month and continued, with no material break, until the 16th; the average temperature of the state for the first 16 days reached 78°. The week ending the 15th was probably one of as great heat as has ever been experienced in September, and has rarely been exceeded during the greatest heat periods of July and August; maximum temperatures above 90° prevailed steadily from the first to the 15th, and temperatures of 100° or higher were not infrequent. The actual highest recorded was 103°, at Alexander on the 11th and 12th and at Walnut on the 12th.

A second heat period began on the 23d and continued with slight interruption to the close of the month, the day temperatures exceeding 90° quite commonly, but night temperatures were low and a large daily range in temperature prevailed, that of the 29th day of the month reaching 39°.

But one cool period of real note occurred during the month and it followed comparatively slowly upon the first heat period reaching its lowest point on the mornings of the 20th and 21st, the former proving the coldest day of the month, with an average temperature of 52°, and an average minimum of 39°. During this period sharp frosts were of common occurrence in all parts of the state, except the extreme south point. The actual lowest recorded was 27° at Philo in Champaign Co. This gives an extreme range of 76°, which is high for September.

The month was not only exceptional because of its great heat but equally so on account of the usual lack of moisture during great heat periods; the average rainfall for the month only reached 1.02 inches, which is 2.03 inches below the normal, and the lowest recorded for the month, being 0.06 of an inch below the very low record of '91. But two rain periods passed over the state during the month, the first, on hand at the beginning of the month, gave general light showers over the central and north sections during the first and second; the second began on the evening of the 15th and ended with the 16th giving light general showers over the entire state. A few light scattered showers also occurred in the north counties on the 10th and 11th, and again on the 20th, while a slight shower just touched the south point of the state on the evening of the 24th; the state as whole remaining dry from the 16th to the close of the month. A very considerable area in the central section had less than 0.50 of an inch, and two stations, Carlinville and Hillsboro, report but a trace of rainfall for the month; the largest amount recorded was 3.43 inches at Walnut, and the greatest in any 24 hours 2.37 at the same station, which fell during the 1st-2d. The average number of rainy days was but two.

The sunshine of the month was almost phenominal, there were 24 days practically without clouds, 5 only partially overcast and but one cloudy day. The sunshine and prevailing wind, which was southerly, were prominent factors in the large excess of temperature.

The total wind movement was 5,367 miles an average hourly velocity of 7.5 miles. The maximum velocity was 45 miles from the northwest at Cairo on the 24th.

The air pressure of the month was also most unusual, the average reaching 30.15 inches, which is in excess of many winter months, and probably 0.15 of an inch above the normal September pressure. The highest was 30.50 at Bloomington on the 20th, lowest 29.86 at Chicago and Davenport on the 18th.

NOTE.—The following changes should be made in the mean temperatures on page 5: Effingham, 72.9, Lexington, 70.2, also in minimum at Greenville, 38°

#### THE PROGRESS OF THE CROP SEASON.

#### Chicago, September 6, 1897.

The temperature of the week averaged 6° to 8° above normal over the state except in northeast counties where it diminished to 1° above; rain was confined to a strip running southeast from northwest counties, and is generally much needed; water is scarce and ponds and creeks are drying up. Earliest fields of corn are being cut and shocked, next are ripening fast and late corn is struggling with the dryness and not filling well; two to three weeks will be required to mature it and the crop will be materially shortened. Plowing has made slow progress or ceased; seeding has only been done in a little of the corn land; pastures, late potatoes and late gardens are needing rain; millet, seed clover and cow pea cutting is being finished; broom corn cutting continues; clover hulling, fruit drying, eider and sorghum making are tures; very little wheat sown, much ground ready but farmgenerally in progress.

#### CHICAGO, SEPTEMBER 13, 1897.

daily above normal, being hottest in west-central counties, and rainfall but light sprinkles in extreme northern counties, elsewhere no rain fell and rain is much needed. Plowing cannot be done and wheat sowing is only attempted with drills in corn fields. Corn has dried out rapidly and cutting is general; rains would not aid the corn now and the crop is materially shortened and much light and chaffy corn will be found from forced ripening. Broomcorn cutting is nearly completed in east-central counties, with late fields proving not as good as early; clover hulling continues, also cider making, fruit drying and marketing, the apple crop generally proving good. Potatoes, both late and early, have proved a failure; stock water is very scarce; wells, ponds, and streams failing or dry, and roads very dusty.

#### CHICAGO, SEPTEMBER 20, 1897.

The temperature of the week averaged from 3° to 6° daily above normal, the heat being broken on Thursday, and light frost occurred in the north half on Saturday and this (Monday) morning, with little or no damage. Showers fell on the 16th, partially relieving the drouth in the north third and south part of the state, but not being sufficient in most central counties, and rain is still generally needed. Corn is practically dry and much cutting has been done, with the yield proving fair to good. Some of the late corn in central and southern counties will only make fodder, and much light, chaffy corn will be found. Plowing has been resumed and some seeding done, although in most central counties only drilling in corn is yet possible; pastures are brown; water scarce; potatoes poor; broomcorn cut and in sheds.

#### CHICAGO, SEPTEMBER 27, 1897.

The temperature of the past week averaged from normal in extreme south to about 4° above in central counties, although sharp frosts were general over the state the first of the week, causing damage to late vines; practically no rain fell. Corn has dried out rapidly and cutting is generally finished, with prospect of early cribbing. The yield is from fair to good, with some large yields, although much light and chaffy corn is found. Wheat and rye seeding are much delayed, and little has been done except in corn fields; the fall plowing also makes slow progress. Broomcorn is cut: clover mostly hulled; apple picking in progress; pastures brown, stock being fed; water scarce and rain much needed for seeding and germination of seed.

#### OBSERVERS NOTES.

Chemung.—Dew fell on thirteen nights of the month, Jos. Kuhles.

DANVILLE. -Quite heavy frost, with thin ice, night of the R. W. Sharpe,

MINONK.—The past month was the warmest September ever known in this locality. O. M. Davison.

CAMBRIDGE.—Very dry and dusty, little fall plowing done; S. B. Randall. wells failing and pastures brown.

NEW BURNSIDE.-Light frost night of the 20th, no damage; very dry and water being hauled to drink. Geo. Harris.

MARTINSVILLE. - Month ends hot and dry, no green pasers afraid to sow. J. B. Sheapley.

Sycamore.—Mean temperature 6.5° above normal; the The temperature of the past week averaged from 8° to 14° 11 days from the 5th to the 15th, inclusive, had a mean maximum temperature of 91°, and a daily mean of 77.3°. Rosewell Dow.

> RANTOUL.—The drouth is very severe, only 1.26 inches of rain since the 25th of July; corn all dried up; no plowing can be done and pastures are as dry as the middle of the road, all stock being fed. H. B. Clark.

> Louisville.—September was a continuation of the August drouth, with temperature much above normal; just onehalf of the month the maximum temperature was 90° or The rainfall (0.24) is the least on record; the total since July 25th being but 0.63 of an inch.

Belford A. Jenkins.

RILEY.—The mean temperature of the month was 6.7° above the normal of 36 past years; Sept. of 1868 was 0 1° warmer; the mean temperature of the first fifteen days was 75.8°; the maximum temperature (95°) and the mean temperature of the first fifteen days were each the highest I have ever recorded in Sept. The precipitation was 2.79° inches below normal; the month in '69, '71, '88, '90 and '91 had smaller amounts. John West James.

#### Barometer and Wind Table.

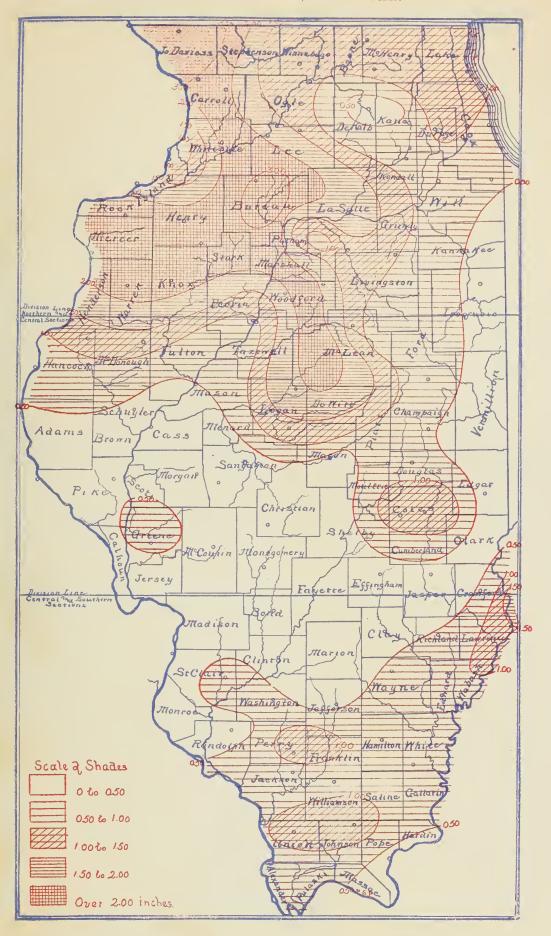
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	Mean.	Highest.	Date.	Lowest.	Date.	Total move- ment.	Average hour-	Miles.	Direc- tion.	Date.
Bloomington	30.19	30.50	20	20.00	18					
Cairo	30.13	30.36	21	29.96	12	3,810	5.3	45	nw.	24
Chicago	30.15	30.42	20	29.86	18	11.338	15.7	39	ne.	26
Davenport	30.11	30.44	20	29.86	18	4,077	5.7	20	sw.	15
Dubuque	30.11	30.47	20	29.89	18	4,052	5.6	38	sw.	16
Galva	30-15	30.40	20	29.89	18					
Grayville	30.14	30.37	21	29.90	19					
Hannibal	30.17	30.46	20	29.94	I	4,972	6.9	26	SW.	15
Keokuk	30.12	30.45	20	29.90	18	4,246	5.9	24	S.	15
Kishwaukee	30.18	30.42	20	29.89	18					
Minouk	30.13	30.40	20	29.88	18					
Olney	30.17	30.34	20	29.95	19					
Oswego	30.18	30.39	20	29.95	18					
Reynolds		20.22	21	29.96	18					
Robinson	30.13	30.32	21	29.90	10					
St. Louis	30.14	30.42	20	29.94	23	5,248	7.3	34	nw.	16
Springfield	30.13	30.42	20	29.93	28	5, 191	7.2	34	ne .	1
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Climatological	data	for	September.	1897.
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NORTHERN SECTION. Ashton Aurora. Cambridge. Chemung Chemung ClificAGO Clear Creek Davenport, la. Dixon Dubudne, la. Dwichit Ft. Sheridan. Galva Hospital Joliet. Kishwaukee Knoxville LaGrange Lamark Martinton Minonk Monmouth. Oswego Ottawa Reynolds Riley Rockford Round Grove St. Charles Scales Mound Streator Sycamore Tiskilwa Wheaton Averages	Kane I Henry Kane I Henry MeHenry I COOK Putnam Scott Lee I Dubuque Livingston I Lake Henry Kankakee Will I Winnebago Knox * Cook Carroll *1 Iroquois Woodford Warren Kendall *1 LaSalle I Rock Island MeHenry Winnebago I Whiteside Kane *1 Jo Daviess LaSalle De Kalb Bureau *3 Bureau *3 Bureau *3 Winnebago Winnebago Winnebago #3 Bureau *3 Bureau *3 Winnebago Winnebago *3	830 676 824 820 824 700 613 725 651 657 693 842 650 541 810 775 657 883 745 657 687 784 650 800 906 626 855 717 700 900 626 855 798		05,2 70,2 70,2 72,2 69,9 69,9 69,1 63,2 707,1 68,1 71,0 68,8 70,0 60,8 70,0 70,0 70,0 70,0 70,0 70,0 80,8 70,0 80,8 70,0 80,8 70,0 80,8 70,0 80,8 70,0 80,9 70,0 80,0 80,0 80,0 80,0 80,0 80,0 80,0	+3.1 +0.0 +5.5 +7.2 +6.7  +8.3  +5.0 +7.1 +0.7	98 89 101 97 97 94 99 97 99 96 99 97 95 97 99 95 93 94 96 103	10† 13 8† 10 10 13 9† 10 13 9† 13 13 13 13 13 13 13 13 13 13 13 13 13	45 355 38 31 42 29 39 34 35 35 32 35 34 32 29 32 35 35 35 34 40 37 37 37 38 38 39 31 40 31 40 31 40 31 40 31 40 31 40 31 40 31 40 40 31 40 40 40 40 40 40 40 40 40 40 40 40 40	200   21   200   21   200   21   200   21   200   20	43 34 45 28 45 34 46 34 42 43 39 52 44 40 38 38 39 52 44 44 43 35 36 41 41 42 44 43 43 44 44 43 46 46 46 46 46 46 46 46 46 46 46 46 46	1.03 0.89 2.27 1.18 0.84 0.95 1.52 2.00 3.19 0.81 1.10 2.46 0.20 0.63 0.62 2.05 0.154 0.29 1.54 0.29 1.54 0.29 1.54 0.29 1.54 0.30 1.54 0.30 1.54 0.40 1.54 0.40 1.54 0.40 1.54 1.55 1.54 1.54 1.54 1.55 1.54 1.55 1.54 1.55 1.54 1.54 1.55 1.54 1.55 1.54 1.55 1.54 1.55 1.54 1.55 1.54 1.55 1.54 1.55 1.54 1.55 1.54 1.55 1.54 1.55 1.54 1.55 1.54 1.55 1.54 1.55 1.54 1.55 1.54 1.55 1.54 1.55 1.54 1.55	-2.13 -2.05 -1.62 -0.90 -0.53 -1.98 -1.56 -0.98 -1.56 -0.98 -1.56 -0.98 -1.56 -0.93	1.30 0.743 0.95 0.87 1.28 2.00 0.45 0.36 1.84 0.15 0.63 0.36 1.20 0.66 1.04 1.78 0.86 1.10 1.57 0.59 0.63 0.40 1.57		3 2 2 4 3 2 2 2 5 5 5 7 3 3 4 4 4 2 3 3 3 1 4 4 5 3 3 4 4 4 2 2 6 6 4 2 4 4 4 4 2 2 5 3 3	244 211 166 177 18 18 17 211 28 20 20 21 24 24 28 22 22 21 24 24 21 26 25 31 19 25 20 27 27 33 19 23 22 22 22 22 22 22 23 24 24 24 26 27 27 28 29 29 20 27 20 27 20 27 20 27 20 20 27 20 20 27 20 20 20 20 20 20 20 20 20 20 20 20 20	5 6 6 13 6 10 9 5 1 8 8 7 7 6 4 4 2 2 9 5 5 7 6 6 4 4 4 3 3 7 7 7 4 4 10 2 2 7 7 11 6 6 4 6 6	1 3 3 1 7 7 2 4 4 4 1 2 1 2 7 7 3 3 1 1 3 2 0 0 3 3 0 0 5 5 2 2 4 4 1 1 0 0 0 1 1 4 2 2 1 1 0 0 1 4 2 2 1 1 0 0 1 1 4 2 2 1 1 0 0 1 1 4 2 2 1 1 0 0 1 1 4 2 2 1 1 0 0 1 1 4 2 2 1 1 0 0 1 1 4 2 2 1 1 0 0 1 1 4 2 2 1 1 0 0 1 1 4 2 2 1 1 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SW. S.	lra R. George. Dr. M. M. Kobbins. S. B. Randall. Jos. Kuhles. Central Office. H. K. Smith. Geo. E. Hunt. @ Eustace Shaw. L. M. Tarr. @ Prof. G. W. Horton. Post Surgeon U. S. A. Prof. F. U. White. E. Ill. Hospital. F. M. Muhlig. Geo. Stevens. C. N. Butt. Prof. F. E. Sanford M. N. Wertz. Geo. W. Bunker. O. M. Davison. D. J. Strang. J. S. Seely. Dr. J. O. Harris. Thos. C. Lewis. John West James. Hosmer C. Porter. R. A. Hawley. S. L. Adams. Joseph Vipond. R. Willlams. Roswell Dow. W. I. Greeley. O. C. Nussle. Wm. H. Johnson. Frank Osborn. Robert McGrath.
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Note,—Unless otherwise indicated the highest lowest and mean temperature are from maximum and minimum thermometers. \*Highest and lowest temperature from observed readings. 1. Mean temperature from 7+2+9+9+4:2.8+8+9+2:3.7a+7p+2:4.6a+6p+2:5.7a+2p+2:a.b.c,d. etc. number days missing @. U. S. Weather Bureau Stations. \*Same temperature occurred on more than one day + Trace in precipitation column when amount is less than 0.01 of an inch.

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REPORT FOR OCTOBER, 1897.

### ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

# WEATHER BUREAU.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE.

UNDER DIRECTION OF

### WILLIS L. MOORE

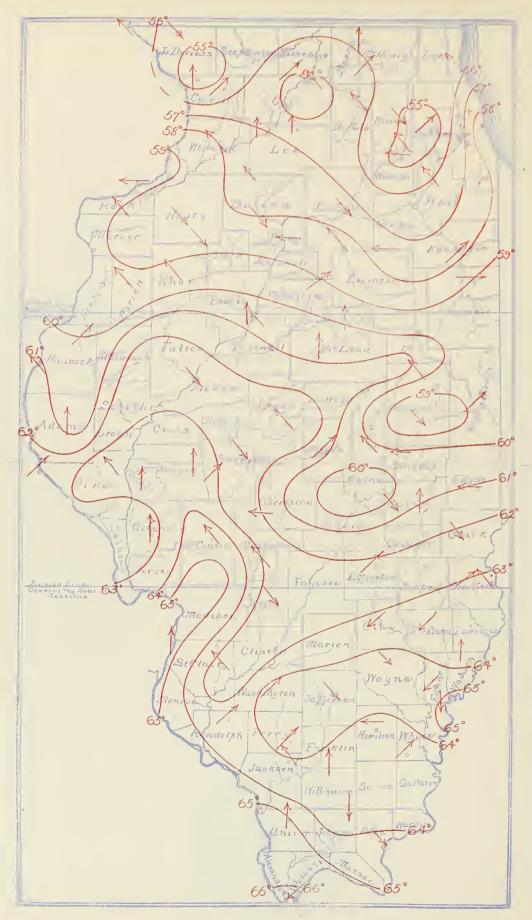
CHIEF OF WEATHER BUREAU

BY

CHARLES E. LINNEY,

OBSERVER AND SECTION DIRECTOR, CHICAGO, HLL.





# CLIMATE AND CROP SERVICE

OF THE

### WEATHER BUREAU.

Central Office, }
Washington, D. C.

VOL. II

(WILLIS L. MOORE,
) Chief.

ILLINOIS SECTION,
CHARLES E. LINNEY, Section Director,
CHICAGO, ILL.

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CHICAGO, ILL.

NO. 10

At the end of October the Illinois River at Havana was 2 feet above low water mark.

Wild geese were observed going south at Lanark on the 5th and at New Burnside on the 17th.

Solar halos were commonly observed on the 6th, 10th, and 16th; also at individual stations on the 5th, 8th, 9th, 12th, 13th, 15th, 18th and 27th.

Lunar halos were commonly observed on the 4th, 6th, 13th, 15th and 16th; also reported from individual stations on the 1st, 2d, 3d, 14th, and 17th.

A brilliant meteor passed over Rantoul at 6 p. m on the 10th; its flight was from SW. to NE.; a bright flash accompanied by a rumbling sound was observed.

Fog prevailed throughout the northern section on the 2d, 23d and 27th, also light fog along the Fox River valley on the 21st, 25th, 26th and 28th. In other parts of the state little fog was observed.

Thunderstorms were quite common in the central and southern sections on the 10th and 11th, and one observer in the southern section reports a thunderstorm on the 28th. A little hail fell on the same day at Hillsboro.

The first expenditure of every observer, once reliable thermometers have been secured, should be toward an instrument shelter in which to expose them. Other plans will inch at afford temporary results but the shelter is almost a necessity where reliable data are desired, and it is a clear month. Waste of time and effort to record any other.

The months of September and October were remarkable for their almost continuous sunshine, high temperatures, low rainfall and few days with rain. In the two months 45 days were clear, and but 5 were cloudy; the total excess in temperature for the two months was 12.4°; the total rainfall but 1.51 inches, which fell on 5 days; August also considered, gives a total rainfall of only 2.63 inches for the

three months and but 10 days with rain, a most unusual record for Illinois.

The temperature of the month averaged 60.3° which is 6.8° above normal, and the highest average temperature for October which we have recorded; exceeding the very warm October of '79 by nearly a degree. A warm wave was on hand at the beginning of the month which continued until the evening of the 5th, and a second period of warmth followed from the 13th to the 16th, although the interval from the 6th to the 12th was one of very mild temperatures. The first day of the month was that upon which the highest temperature was most commonly recorded, although many recorded the highest on the 5th and a few on the 2d, 3d, 4th, 6th, 11th and 15th. The actual highest was 98°, observed at Walnut on the 1st, and at Alexander on the 2d; a temperature which would usually be expected in July or August rather than in October.

As heretofore suggested the first cool period was very mild, and the second, which came on the night of the 16th, also gave cool, pleasant weather which continued, with slight interruption, until the close of the month. During this period no severe weather was experienced although sharp frosts prevailed over the state on several mornings. The lowest temperature of the month was quite generally recorded on the morning of the 29th; the average temperature on this morning just touching the freezing point, 32°. The lowest recorded was 20°, noted at Scales Mound on the morning of the 26th. This gives an extreme range in temperature of 78°, while the average greatest daily range was 41°. The daily range in temperature during the greater part of the month was large, exceeding 30° on many days.

The rainfall of the month gave the very low average of 0.49 of an inch, which is 2.35 inches below the normal October fall, and the least which we have thus far recorded, being 0.13 of an inch below the very low average in '95. Only one rain period of any note passed over the state during the month, it came from the morning of 10th to the evening of the 11th. Sprinkles were, however, recorded from the 6th to the 8th, from the 15th to the 20th, and on the 28th, while the rain storm which began on the last day of the month and continued into November, caused a break in the drouth condition. The largest amount recorded within the state was 1.64 inches at Hallidayboro, and the least 0.04 of an inch at Peoria; the greatest fall recorded in any 24 hours was 1.49 inches at Hallidayboro on the 31st day of the month.

The sunshine throughout the month was almost continous, there were 21 clear days, 6 partly cloudy and but 4 cloudy days, while rain fell on an average of but 3 days.

The prevailing wind direction for the month was SE., with an average hourly velocity of 7.8 miles, and a maximum velocity of 47 miles from the SW. at Chicago, on the 14th. The air pressure for the month averaged 30.07 inches; highest 30.49 at Dubuque on the 17th, least 29.44 at Chicago and Davenport on the 11th.

#### THE CROP SEASON OF 1897.

The winter months left a large excess of water in the ground and the month of March closed with little or no work done. Grain passed through the winter in poor condition but fruit seemed unharmed, except peaches in the north half of the state. The conditions at the first of April were summarized as follows: The soil everywhere is wet, in most of the state far too wet for work, and little has been done

The seeding of oats and spring wheat began in northeast counties with the second week in April, but was stopped abruptly by a fall of from one to four inches of snow over the north half of the state; farm work was thus much delayed; wheat showed serious damage, but grasses started

out finely.

Cold, cloudy, frosty weather continued until the 19th of April, the soil slowly dryed out and oats and spring wheat seeding gradually became more general; gardens and potatoes were planted and fruits began to show blooms. April closed with more favorable weather and oats, spring wheat and barley seeding mostly done; gardening and potato planting well under way; a little corn planted in the southern section; pastures and meadows doing well, and fruits in full bloom in the south half of the state.

Corn planting became general by the middle of the second week in May; rye was heading in central and wheat in southern counties, and early garden truck and strawberries were on the market. The soil however remained wet and soggy, working up in clods, and making the work slow and difficult. Planting was mostly finished by the 25th, although some late planting and re-planting was done until the second week in June. Cultivators were running by the end of May; oats, spring wheat, rye and winter wheat were growing slowly, many fields having been plowed up on account of poor outlook; gardens and potatoes seemed to be doing well and fruits were very promising, with berries plentiful on the markets. A few light frosts in May and June did little damage owing to hardy vegetation.

Clover hay making began the first week in June and winter wheat cutting the second; oats were heading short and, with pastures and meadows, were needing rain, the rains having become local in character and generally inadequate. The cutting of winter wheat, rye and clover was general by the last of June, early and southern fields having been cut and shocked previously; wheat showed a marked improvement in filling and the small acreage turned out well. Early corn was generally laid-by by the last of June and was

making good progress.

The oats harvest was well under way by the middle of July, the crop proving fair, but with short straw; wheat and rye were cut and stacked, except in extreme north where cuting of rye and barley was in progress; spring wheat proved a failure and was mostly plowed up; timothy haying was in full blast, with fair to good yield; corn was tasseling and silking, having made wonderful growth. The oats harvest was practically finished by the last week in July, and some threshing had been done; wheat and rye were being threshed; haying was mostly finished, and, aided by timely showers, crops were making good progress.

Early corn reached the roasting ear stage by the end of the first week in August and late fields were tasseling and silking, wheat, rye and oats threshing continued; fall plowing was begun, and millet mostly cut. Dryness began to effect corn about the middle of August and some fields were firing, aided by einch bugs; broom-corn, and second-crop clover cutting was well under way by the third week, but the drouth became more severe and plowing was being done

with difficulty. The heat and dryness continued and corn began drying out rapidly so that early corn was ready to cut by the first week in September; and late corn was suffering for rain; potatoes had proved a failure.

A large part of the state did not receive sufficient rain during September and corn was forced to rapid maturity, so that little or no harm was done by the sharp frosts of the 20th; cutting was practically finished; little wheat or rye had been sown because of the extreme dryness and the pastures had long since become brown and bare.

Little or no improvement is to be reported up to the close of October and fall plowing and seeding have been impossible except seeding on a small scale with drills in corn fields; and in many cases sprouted grain has since died from lack of moisture.

The season (Sept.) closed with a departure of 5.23 inches less than normal rainfall and a little more than one-tenth of a degree daily excess in temperature, but considering the large excess of moisture at the beginning of April, nearly the normal amount was available for crop growth, and the season as a whole was fruitful.

October was a month of unusual dryness and large excess in temperature, soil everywhere too dry for successful plowing or seeding, and little rye has been sown in usual counties in north half, while the wheat acreage sown is much less than anticipated. Seeding is now practically finished and much early sown, having sprouted, has died; later sown has not sprouted and a large amount lies dormant awaiting rain. There are no fall pastures and stock generally has been fed from four to eight weeks already; dairy interests are seriously affected; stock water very scarce and wells, ponds, and creeks throughout state dry or failing; dust very bad. Corn husking and cribbing in progress with prospect of early finishing, yield fair to good, and crop of fair quality, although not all firm, sound corn; husking somewhat slow on account of extreme dryness of stalks. Apples mostly picked and marketed with fair to good yield. fair quality; both yield and quality lessened by drouth and heat; grapes a good crop; late potatoes less than half crop of only fair quality; northern broomcorn good yield and good quality.

Up to the time of going to press (Nov. 12th) several good rains have fallen, materially relieving the drouth condition.

#### Barometer and Wind Table.

		Bar	omet	er.				Wind	l.	
Stations.						t.	hour-	Max	imum citv.	
	Mean.	Highest.	Date.	Lowest.	Date.	Total move ment.	Average hour-	Miles.	Diree- tion.	Date.
Bloomington	70.10			20. 56						
airo	30.10	30.41	17	29.56	II					
hicago	30.07	30.32	4	29.62	II	4,089	5.5	36	S.	10
avenport	30.04	30.47	17	29.44	II	12,927 4,756	17.5	47	sw.	14
Oubuque	30.05	30.49	17	29.44	II	4,750	6.4	23	SW.	14
alva	30.08	30.49	3	29.54	II	4,500	0.1	28	nw.	5
rayville	30.06	30.37	3	29.52	II					
Iannibal	30.10	30.36	17	29.54	II	5,744	7.7	28	SW.	
Keokuk	30.06	30.38	17	29.53	11	4,808	6.5	20	S.	14
Kishwaukee	30.05	30.41	17	29.52	11	4,000	0.5	20	8.	14
dinonk	30.06	30.41	17	29.54	. 11					
Olney	30.07	30.36	3	29.56	11					
)swego	30.10	30.42	17	29.47	11					
Robinson	30.05	30.34	3	29.60	11					
t. Louis	30.08	30.35	3	29.59	11	5,802	7.8	26	n.	16
pringfield	30.07	30.36	17	29.55	II	5,897	7.9	24	s.	14
Reynolds										1.4
Rushville										
Averages	30.07	30.39		29.53		6,066	7.8			

O112	-111	3-4- 8	October.	1407
Climate	ological	data ior	October.	1387.

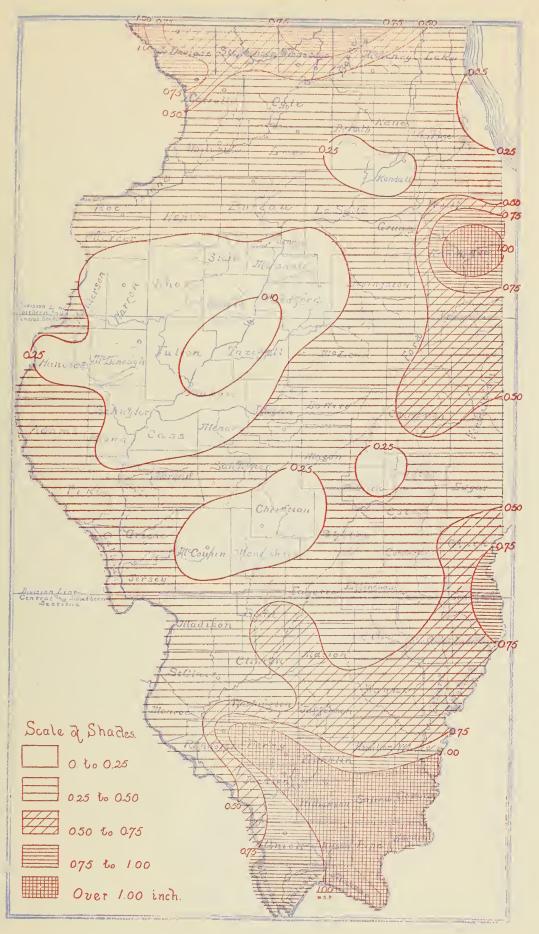
						Cl	imat	olog	gical	da	ta fo	r Oct	ober.	1897	•						
-				cord,	Temp	erature	e,in de	egree	s Fal	hren	helt.	Pre	cipitatio	on, in i	inches			Sky.		ction	
	Stations.	Counties.	Elevation feet.	Length of reco	Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal	Greatest in 24 hours.	Total snowfall unmelted.	Number rainy days.	Number clear days.	Number partly cloudy days.	Number cloudy days.	Prevailing direction wind.	Observers.
AAACCUCUUDUUTEGHUK LLIM MMOORRRRSSSSTWWWZ		McHenry . 1	820 824 700 613 725 651 657 693 842 650 541	26 26 28 8 36 15 16 11 15 15 15 15 15 15 15 15 15 15 15 15	55.4 58.6 57.4 59.9 50.0 55.9 59.2 59.2 59.2 59.2 59.5 59.5 59.5 58.8 56.3 58.2 55.2 55.2 55.2 55.2 55.3 6.8 6.0 61.4 56	+4.8 +5.9 +6.0 +6.6  +11.1  +7.5 +0.1 +9.7	98 89 88	1	30 30 30 38 38 38 32 33 32 31 32 30 27 30 27 30 27 30 30 27 30 30 27 30 30 27 30 30 30 30 30 30 30 30 30 30 30 30 30	29 29 29 30† 29 29 29 29 29 29 29 29 29 29 29 29 29	45 34 39 26 47 37 38 41 38 42 42 52 52 40 45 44 43 40 34 43 40 45 46 47 47 48 49 40 40 40 41 41 41 41 41 41 41 41 41 41 41 41 41	0, 32 0, 33 0, 84 0, 18 0, 23 0, 64 1, 02 0, 23 1, 60 0, 23 1, 60 0, 23 0, 13 0, 13 0, 13 0, 13 0, 15 0, 48 0, 20 0, 23 0, 23 0, 13 0, 13 0, 13 0, 13 0, 14 0, 25 0, 23 0, 13 0, 13 0, 13 0, 13 0, 14 0, 15 0, 15 0, 16 0, 17 0, 18 0, 18	-2.41 -2.71 -2.59 -2.15 -1.69 -1.90 -2.44 -1.86 -2.95 -1.92	0.25 0.33 0.84 0.18 0.35 0.48 0.70 0.26 0.25 0.23 0.25 0.36 0.40 0.13 0.45 0.45 0.45 0.47 0.45 0.49 0.43 0.49 0.49 0.49		2 2 2 1 1 1 2 2 2 2 4 4 3 1 1 2 2 2 3 3 1 1 4 4 2 2 2 2 2 2 2 2 2 2 3 3 4 4 2 2	199 177 144 100 200 188 155 222 211 166 200 168 23 199 177 166 214 188 111 222 200 100 21 199 188 177 177 18	8 11 13 17 7 7 7 5 9 6 6 5 11	4 3 4 4 4 4 8 8 7 7 3 3 5 5 4 4 4 4 4 9 9 9 9 7 7 6 6 4 4 1 7 7 0 0 5 5 7 3 3 5 5 4 9 9 5 5	s. se. nw se. e. se. nw. se. se. mw. se. se. nw. se. se. nw. se. se. nw. se. se. se. nw. se. se. se. se. se. se. se. se. se. se	Ira R. George. Dr. M. M. Robbins. S. B. Randall. Jos. Kuhles. Central Office. H. K. Smith. Geo. E. Hunt. @ Eustaee Shaw. L. M. Tarr. @ Prof. G. W. Horton. Post Surgeon U. S. A. Prof. F. U. White. E. Ill. Hospital. F. M. Muhlig. C. N. Butt. Prof. F. E. Sanford M. N. Wertz. Geo. W. Bunker. O. M. Davison. D. J. Strang. J. S. Seely. Dr. J. O. Harris. Thos. C. Lewis. John West James. Hosmer C. Porter. R. A. Hawley. S. L. Adams. Joseph Vipond. R. Williams. Roswell Dow. W. I. Greeley. O. C. Nussle. Wm. H. Johnson. Frank Osborn. Robert McGrath.
ABBUCCCCDDEGHHUKLLMMMMPPPPREST	artinsville artinsville attoon attoon orrisonville t. Pulaski alestine ana eoria hilo antoul obinson pringfield uscola Averages	Coles. Adams. Vermillion. Macon. Effingham Pike. Marion. Masson Montgomery. Lee. Haneock. McLean. Clark Coles. *I Christian Logan. Crawford Christian Peoria.	685 500 692 519 700 768 500 644 664	41	61. o 63. o 64. o 61. o 60. 2 59. 6 61. s 62. 2 64. 1 61. 8 62. 2 64. 1 61. 8 59. 6 59. 2 64. 0 62. 5 61. 8 59. 6 62. 3	+6.4 +7.8 +5.5 +4.3 +8.6 +6.9 +7.7	93 97 94 94 85 92 94 92 94 90 91 90 91 93 88 89 93 93 93 93 94 93 93 93 93 93 93 93 93 93 93 93 93 93	2 2 1 2+ 4 5+ 3+ 15 2 5 1 1 1 2 1 1 5 5 2 5 1 1 1 1 5 1 5	34  31 26 29 33 34 28	29 29 28 29 29 29 29 29 29 29 29 29 29 29 29 29	46 43 43 43 40 44 45 55 41 40 48 40 47 44 41 41 41 41 41 42 45 36 47 42 47 42	0.33 0.48 0.21 0.31 0.42 0.53 0.49 0.25 0.42 0.08 0.42 0.08 0.25 0.37 0.47 0.57	-2.26 -2.86 -2.86 -2.86 -2.52 -3.45 -3.66 -1.21 -2.61 -1.20	0.48 0.21 0.19 0.16 0.42 0.53 (*.29 0.28 0.08 0.16 0.24 0.26 0.35 0.09 0.14 0.09 0.35 0.50 0.44 0.35 0.44		2 2 3  1 2 2 3 2 2	22	3 12 4 6 7 4	3 3 4 4 2 2 2 3 3 4 4 5	s. se. s. s. s. sw. sw. sw. se. sw. nw. se. sw. nw. nw. se. se. sw. nw. nw. se.	George II. Hall. Prof. M. P. Lackland. Dan E. Zook. R. O. Purviance. Prof. (lyde Slone. Jacob B. Dazey. Dr. J. R. Lambert. Prof. R. W. Sharpe. Prof. J. H. Coonradt. Alfred Fitch. Emily R. Gray. R. L. Anderson. @ Genl. J. M. Ruggles. P. J. Edwards. Fred Z. Gosewisch. @ Frank Campbell. D. F. Trimmer. J. B. Sheapley. Jos. Withington. Harry Grundy. Z. K. Wood. John E. Templeton. Will F. Jordan. Dr. Fred Brendel. H. A. Burr. II. B. Clark. A. P. Woodworth. John (Traig. @ E. W. Lester.
ACCOOK GOOD HOUSE STATE OF THE	ouisville	Alexander Wayne Union Wabash *4 Pope. White Bond I Jackson *5. Williamson.		26 	66.0 64.2 65.4 62.5 64.2 65.8 61.4 63.2 63.4 63.2 63.7 63.0 63.6 62.0 64.0 64.2 64.9 64.8 66.3 64.3	+7.3	93 92 91 92 95 97 94 92 93 90 94 94 93		35 40 31 39 33		37 33 41 42 44 34 37 45 40 39 41 33 40 40 41	0.31	—I.09 —I.49 —I.15 —I.95	0.40 0.41 0.50 0.34 0.80 0.37 1.49 1.00 0.81 0.80 0.23 0.24 0.22 0.48 0.76 0.35 0.25 1.24 0.16 0.54		4 2 2 5 4 4 5 5 4 4 4 2 2 2 2 2 2 2 2 2	30 26 28 27 18 23 22 26 26 25 18 18 22 25 24 18 24 24	0 2 1 0 7 5 3 8 2 9 3 1 1 1 8 4 1 1 5 5 3 3 4 1 1 5 5 5 7 7 7 8 7 8 8 8 8 8 8 8 8 8 8 8 8	3 1 3 2 4 6 6 3 3 5 5 1 1 3 3 2 4 3 3 3 3 3 3 3 3 3 3 4 3 3 4 3 4	ne. nw. s. s. nw. n. nw. se. sw. s-ne e. se. nw. n. sw. sw. sw. sw.	B. F. Michels. P. H. Smyth.@ W. II. Mix. John Buck. V. E. Majors. Jas. Hammons, Jr. John B. Starkey. Prof. M. S. Oudyn. E. E. Thornton. D. R. Harrison. W. F. Hoskins. W. J. S. Catheart. Belford A. Jenkins. John Judd. Dr. G. Leibrock. J. F. Bogan. George Harris. Victor E. Phillips. J. C. Chesney. J. C. Sylvester. Dr. II. C. Frankcnfield.@

Note,—Unless otherwise indicated the highest, lowest and mean temperature are from maximum and minimum thermometers. \*Highest and lowest temperature from observed readings. 1. Mean temperature from 7+2+9+9+4:2.8+8p+2:3.7a+7p+2:4.6a+6p+2:5.7a+2p+2.a.b,c,d. etc. number days missing @. U.S. Weather Bureau Stations. †Same temperature occurred on more than one day + Trace in precipitation column when amount is less than 0.01 of an inch.

Maximum and minimum temperatures for October, 1897.

Monthly mean. 'ujW x 6 1-0 01 1-0 4-- 4 4 4 4 4 6 5 Max. Min 31. 5 2 3 7 1 8 3 3 8 2 1 3 2 5 3 3 8 6 5 7 Max RELEASER EXECUTE ELECTRICAL THEFT 30. Max 231757278737377778 um 68 Max Win နွင့် 327273367323293333573335735 Max. 28888888888888888888 uin 27. 244 28211341142128212882128811483114831 1122221118212822211 Max. 248355418888471258 Min. 26. Max. 46 80 8 1 400 4 8 4 8 4 6 6 4 4 \$25.50 \$4.50 \$ um. 25. Max. 08 00 41 408 088 4128 88 0010 4811 888 54252244444446488 44848648648884488448 Min ₹ Мах 5 40 8 6 8 4 6 4 8 4 8 8 8 4 8 8 8 4 8 ulm 88 XEM \$\frac{1}{2}\$\frac ULIC € £8878888888888888 Max \$\text{\$\ 20224444445448444 uin 21. Max \$5,500 \$5 unv . 20. Max Min 13 55245748624554545 MSZ uiM. 38 8 0 44 24 44 0 4 4 2 0 1 2 2 0 4 9 2 7 1 8 4 7 7 8 MEM ·ui w 33.5 47.7 17. Max. Min. 16, Max 8 X 8 8 X X X 8 8 X 8 7 8 8 X 8 8 8 X 8 8 8 X 8 8 X 8 8 X 8 8 X 8 Min. 15. Max.  $\begin{smallmatrix} 88885 \\ 888777 \\ 988877 \\ 988777 \\ 988877 \\ 98$ 22455617377755574558778455855 Min. 14. Max. uiw 13. Max. Min Ξ. Max. Min 11. Max. 1444 4444 114 Min 5 Nex une Max. nik Max Min. Max. uik \$\frac{4}{2} \frac{4}{2} \frac 9 KER 24 0 0 4 7 7 7 8 8 7 7 7 8 8 7 7 7 8 8 7 7 7 8 8 7 7 7 8 8 7 7 7 7 8 8 7 7 7 8 8 7 7 7 8 8 7 7 8 8 7 7 8 8 7 7 8 8 7 7 8 8 7 7 8 8 7 7 8 8 7 7 8 8 7 7 8 8 7 7 8 8 7 7 8 8 7 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 7 8 7 8 8 7 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 7 8 7 8 8 7 ung M 9 K  $\begin{smallmatrix} 666 & 668 & 66$ uim ÷ Max Win. က် Max. Min Max. 57.50 55.5.2 5.5.2 5.5.3 5 Min.  $\begin{smallmatrix} 44000 & 44044 & 4400 & 440$ 8 8 5 6 8 8 9 6 8 8 8 9 6 6 8 8 8 9 6 MEX. brondans Grove
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#### Daily precipitation for October, 1897.

									-						DAY	OF M	TROM	CH.														-:
Stations.	1.	2.	3.	4.	5.	6.	7.	8.	9	10.	11	12	13						19	90	91	99	93	94	95	96	97	9%	6363	9/1	91	Total
	1	~.	0.	1	0.	0.		0.		10.	1	10.	1	177.	10.			10+	10.	40.	A2.	Ash.	1013.	W1.	las),	100).	21.	200.	40.	30.	31.	
NORTHERN SECTION.																																
AshtonAurora					. †	. †		+	. †	.12	.25																				.08	0.32
Cambridge						+		::::		†	. 84																					33
							†	†			*18																				+	0.18
Davenport, Ia					. +					.12	. 23								+									†			†	0.18
Dixon Dubuque, Ia								+		.03	.69					.12			. 20												+	0.48
Dwight						+		+		.03	.25																				.18	0.44
GalvaGlenwood										.13	.10																				+	0.23
Hospital											1.40																	†			.20	0.45
Joliet								10000		20																					-14	0.44
LaGrange										†																					.07	0.33
Martinton					+						- 59																					0.39
Minonk					. 7					.02	11.																				+	0.13
OswegoOttawa.										6																		1 .			.05	0.15
Reynolds						10.				.15	.30								+												.05	0.45
Rockford										. 26	.40						+	.02														0.48
Round Grove								*			- 6																					0.43
Scales Mound						+		+		.05	.19					•06		+	.18	.02											+	0.28
Sycamore						+				.06	• 32																				.03	0.23
Tiskilwa Walnut			::::							. 23	.13				†				† †													0.36
Wheaton				1					,		. 42																				.07	0.49
Zion		1 1	::::		1			.03		•05									. 20													0.58
~	.00	.00	.00	00 •	p' †	†	+	1	+	.05	•33	.00	00.	•00	.01	10.	+	+	.02	+	.00	.00	.00	.00	.00	.00	+00	+	.00	•00	.03	0.44
CENTRAL SECTION.											22																					
Alexander					1						• 24																				.10	0.33
BloomingtonBushnelf			: ::::		+	.:::				+	.48	†										1 1									+	0.48
Carlinville										• • • •	-19											••••									• 02	0.21
Carrollton																															.16	0.31
Coatsburg Danville		1			+		::::			.25					• • • • •													+			+	0.53
Decatur East Peoria											. 28																	+			+	0.28
Effingham											.25	.03	3							• • • •											-14	0.09
GriggsvilleHannibal, Mo									::::	• 06	.25						+		+									+			.07	0.25
HavanaHillsboro.				]			••••			†	.08																	.04				0.08
Keokuk, Ia						1				.10	.14																				.05	0.25
La Harpe Lexington					:::7		::::		1	.18		• • • •				1 1																0.26
Loami											.19																				.05	
Mattoon	1)										.10	.06															• • • •	†			.14	0.69
					10000	::::			::::																						.03	0.12
					1						.50				• • • •									• • • •			• • • •	+		•••		
Peoria											.04																					0.04
PhiloRantoul					+					†	. 28					†			1 1									+	1		.30	0.58
Robinson				,   • • • • [							.20								.08												.25	0.53
Tuscola	1										.13						]														.14	0.27
Averages	.00	•00	.00	.06	1	.00	•00	.00	.00	.02	.23	1	.00	.00	†		1	†	.01	•00	.00	.00	.00	•00	•00	.00	.00	†	,00	.00	0.10	0.36
Albion					A J						L	. 24							10												.18	0.6
Cairo										1 † [	.40						!		. 14									.02			- 35	0.91
Chester	1 1										.17																	1 1			. 25	0.64
Cisne											. 25																					0.66
Friend Grove				1						+	. 34	.09							+									+			•10	0.77
GolcondaGrayville										. 15	.30								.03									+			.10	0.73
Greenville											-37									]								†			, 22	0.59
Herrin											.10																	.05			1.49	1.19
Jordans Grove				::::						:.::	.81								. 26					:				+			.80	
Louisville											.23																				-14	0.3
McLeansboro					4						22										- 2							1	i i		.24	0.4
Mt. Vernon										• • • •	.48				• • • •					••••						• • • • •		+			-08	0 5
Mt. Vernon New Burnside Olney Plum Hill											.17								+									+			.35	0.5
St. JUHH																																1.40
St. Louis, Mo											. 16																				. 15	0.31
Averages	.00	.00	.00	.00	+	t	+	+	+	.03	.29	.01	.00	.00	+	+	+	†	.02	+	.00	.00	.00	.00	•00	.00	.00	+	.00	.00	.13	0.49
						/	ly ly	1	/			7								- 1										- 6		

REPORT FOR NOVEMBER, 1897.

### ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

# WEATHER BUREAU.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE.

UNDER DIRECTION OF

### WILLIS L. MOORE

CHIEF OF WEATHER BUREAU

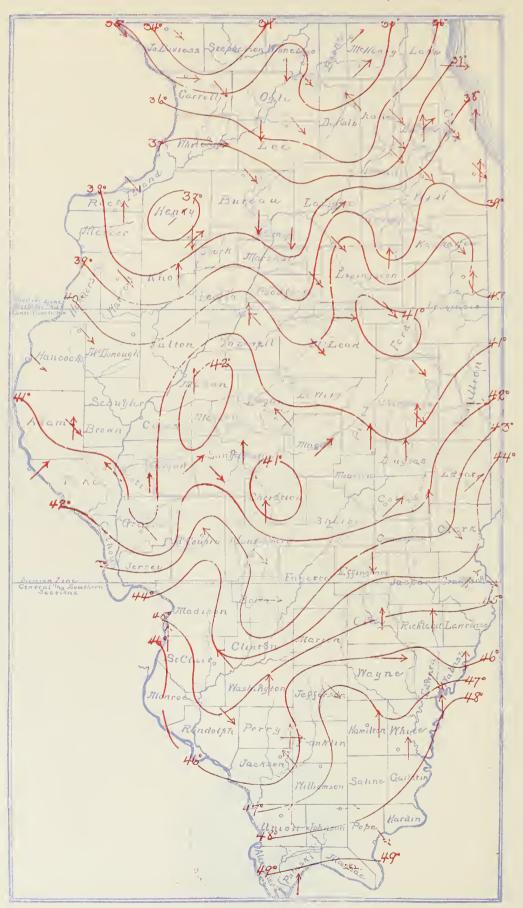
ву

CHARLES E. LINNEY,

OBSERVER AND SECTION DIRECTOR, CHICAGO, ILL.



### MEAN TEMPERATURE AND PREVAILING WINDS, NOVEMBER.



## CLIMATE AND CROP SERVICE

OF THE

### WEATHER BUREAU.

Central Office, (WASHINGTON, D. C.)

WILLIS L. MOORE, Chief.

ILLINOIS SECTION,
CHARLES E. LINNEY, Section Director,
CHICAGO, ILL.

VOL. II.

CHICAGO, ILL.

NO. 11.

Thunderstorms were general over the state on the 7th, 8th, 14th, 15th, 16th and 26th.

Lunar halos were commonly observed on the 4th, 9th, 18th, 29th and 30th; solar halos on the 4th, 6th, 10th, 13th, 18th and 19th.

The first snow flurries of the season generally came on the 11th and 12th, but the month as a whole was practically lacking in snow.

The 6th, 7th and 8th were days with fog along the Misissippi, and the 24th, 25th and 26th along the upper Fox River valley and Lake Michigan.

Sleet was reported from a few stations on the 15th, 24th, 25th and 26th; and small hail on the 8th, 25th, 27th and 28th; this was probably small snow pellets.

In the Weather Bureau the following plan is adopted to dispose of fractions: when the fraction is less than a half degree drop it; when more than a half add one; when a half with an even number drop it, when a half with an odd number add one; thus 68.5° would be recorded 68°, and 67.5 would be recorded 68°. The plan is recommended to our voluntary observers as an easy and good method of disposing of fractions.

We have been pleased to receive calls recently from the following Observers; Dr. M. M. Robbins, Aurora; Mr. Joseph Kuhles, Chemung; Mr. Alfred Fitch, Effingham; Mr. F. M. Muhlig, Joliet; Prof. F. E. Sanford, La Grange; Dr. J. O. Harris, Ottowa; Mr. A. P. Woodworth, Robinson; Mr. R. A. Hawley, Round Grove; Mr. O. C. Nussel, Walnut; Mr. Thos. C. Lewis, Reynolds; Mr. John B. Starkey, Grayville; Mr. Paul Huston, Jr. Paris; Mr. Clark Holbrook, Glenwood; Mr. H. B. Clark, Rantoul; Mr. J. S. Dumser, Elgin; Mr. J. S. Seely, Oswego; we are always glad to have the Observers call when in the city.

The temperature for the month averaged 40.8°, which is should be 46°.

1.7° above normal. The month began with rain and comparatively warm, even temperature. The warmth gradually increased to the 4th; and throughout the northern section the highest temperature of the month was quite generally recorded on that day. A second warm period followed on the 13th and 14th, and a third on the 20th and 21st, the former proving slightly the warmest day of the month, its average temperature reaching 55°.

The first cool period came on the 5th, and continued, with little variation, until the evening of the 12th; a second came in on the afternoon of the 15th, a very sudden and marked change; a third came on the afternoon and evening of the 21st and also proved a decided fall. The temperature rose slightly on the 25th and 26th but again fell to the lowest temperature of the month on the 29th, this proving the coldest day of the month, with an average temperature of 20°. The highest recorded was 78° at Mt. Vernon on the 15th; lowest —8° at Zion on the 29th, giving a range of 86°. The average of the greatest daily range for the state was 33°.

The rainfall of the month averaged 4.09 inches, which is 0.95 of an inch above normal. The rain which began on the 31st of October continued general over the state on the first day of November, and in the central and southern sections on the second; a second short period passed over the state on the 5th, giving general rain; a third began on the 7th and continued in the northern section until the night of the 10th; the fourth began on the evening of the 13th and continued until the 16th, and the fifth began on the night of 24th and continued until the 26th, while traces of rain and light flurries of snow prevailed on the last three days of the month; the northern section receiving an average of 0.3 of an inch of snow. The first half of the month was wet and with the even, warm temperature, was of much benefit to the state, relieving the protracted drouth condition and filling the soil for the cold weather of the last two days of the month. The greatest fall recorded within the state was 7.85 inches at Robinson; the least 1.15 inches at Scales Mound. The rainfall chart this month shows graphically the very marked increase in rainfall from the northwest to the scutheast counties, a large strip in the northwest portion of the state having less than two inches. The greatest fall in any 24 hours was 2.24 inches at Cairo on the 1st.

There were 10 days with .01 or more precipitation; 11 day clear, 7 partly cloudy and 12 cloudy, nearly the normal condition for November. The prevailing wind direction was NW. although the S. records are almost as numerous; the average hourly velocity was 10.8, greatest velocity 55 miles from the SW. at Chicago on the 10th.

The air pressure averaged 30.10 inches, as recorded at 16 stations; highest 30.69 inches at Galva on the 16th and at St. Louis on the 17th; lowest 29.42 at Grayville on the 8th.

Although rather given to rain, the month as a whole was a very pleasant one and proved of marked benefit to the farming community.

Note.—The mean temperature of Albion, on page 5, should be 46°.

snow season being at hand observers should make specifier to secure the snowfall each day, the result of the me as melted snow, and the actual depth of the solven the ground at the close of the day, recording each improper column on the form. The suggestions control in the recent Instructions to Voluntary Observers and be carefully followed, both in regard to the snow are urements and also the use of the maximum and minature thermometers mentioned below.

ne month of November was favorable for the finishing all work; corn husking and cribbing were generally completed and the odd ends of fall work were done; corn poved a slight disappointment generally; but still a large nount of good corn has been secured. The generous rains ver most of the state proved of great benefit and stock water s once more plentiful, with the surface soil fairly well filled for the winter's freezing, although more and heavier rains would help wells and lower soils. Fall sown grain was given new life and, although weak and tender, is at least much better than no stand at all, which was very generally the case nearly to the close of October. The sharp cold at the end of the month probably caused some damage owing to the tenderness of the plant, the lateness of the season and the lack of protection, as no snow covered the ground. Roads during the month were inclined to be rough, especially in the central and southern section; stock is generally in good condition.

Beginning with the new year it is the desire of the Chiefof the Bureau that the daily and monthly mean temperatures, published in the publication of this section and later in the Monthly Weather Review, be obtained, as far as possible, from readings of the maximum and minimum thermometers. Where these instruments are used other readings may be omitted, such as current readings at 7 a.m. and 7 p. m., or at 7 a.m. 2 and 9 p.m., since means from these in such cases will not be computed. The regular form for Voluntary Observers (No. 1009) may thus be completed by taking one regular observation a day, which in all cases should be made toward the close of the day, as 7, 8 or 9 p.m., at which time both thermometers should be read and both set, the rain or snow measured, and the record for the day com-In case, however, but one observation is made, extra care should be used to secure the absolute highest and lowest of the 24 hours ending at the hour of observation. Thus it should always be kept in mind that no current reading can be higher than the maximum as recorded by your maximum thermometer, nor can a current reading be lower than that recorded by your minimum, and to this end it is valuable to note the readings of the thermometers at some other hour of the day, as at 7 a.m. or about the noon hour, but do not set them at these casual observations.

#### OBSERVERS NOTES.

Dixon.—Rock River coated with ice on the 27th.

Eustace Shaw.

Oswego.—Fox River frozen on the night of the 29th.

J. S. Seely.

NEW BURNSIDE.—First ice noticed on the morning of the 3th.

Geo. Harris.

BLOOMINGTON.—November was a fine winter month; rain was badly needed and none too much fell. M. P. Lackland.

St. Charles.—Wild geese seen on the 10th; first snow on 11th; river closed on the 29th, with skating on the ponds.

S. L. Adams.

HAVANA.—Thunder and lightning on the night of the 25th; Illinois River 3.5 ft. above low water mark at the close of month.

J. M. Ruggles.

Danville.—Heavy thunderstorms prevailed here on the evenings of the 7th and 8th, also on the morning of the 14th; all passed from the SW. to the NE. R. W. Sharpe.

KNOXVILLE.—Farmers all through husking corn; yield not large and of medium quality; all kinds of stock doing well; fall wheat looking fairly well.

C. N. Butt.

Martinsville.—A cool dreary month; winter wheat coming up nicely, some fall plowing being done since the ground got damp; stock wells still short of water. J. B. Sheapley.

RILEY.—The mean temperature of the month was just 1° above normal; precipitation 0.47 of an inch above: the mean temperature of the autumn was 5.1° above normal, and the highest yet recorded; precipitation of the autumn was 4.20 inches below normal, only 1892 had less; up to the 25th of November this was the dryest autumn on record.

John West James.

WINCHESTER.—On the 29th we had a sudden and severe change to colder weather, since which I have heard several of our best farmers say that they think our growing wheat was likely to be seriously injured, as it was so young and tender. A great deal of it had only come through the ground since the rains in the fore part of the month.

Geo. Hurd.

Barometer and Wind Table.

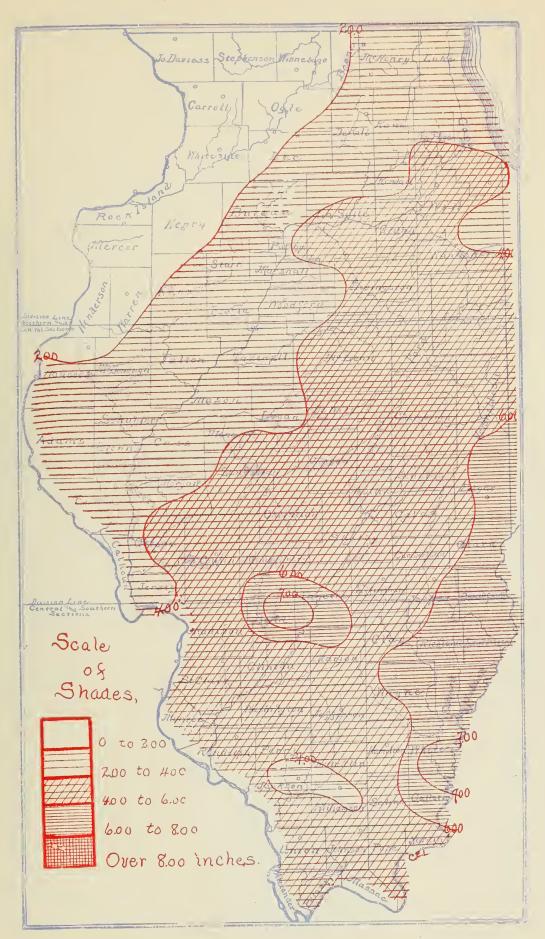
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Note,—Unless otherwise indicated the highest, lowest and mean temperature are from maximum and minimum thermometers. \*Highest and lowest temperature from observed readings. 1. Mean temperature from 7+2+9+9+4:2. 8 a + 8 p  $\div$  2: 3. 7 a + 7 p  $\div$  2: 4. 6a + 6 p  $\div$  2: 5. 7 a + 2 p  $\div$  2. a. b, c, d. etc. number days missing @. U. S. Weather Bureau Stations. †Same temperature occurred on more than one day  $\dagger$  Trace in precipitation column when amount is less than 0.01 of an inch.

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REPORT FOR DECEMBER, 1897.

## ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

# WEATHER BUREAU.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE.

UNDER DIRECTION OF

### WILLIS L. MOORE

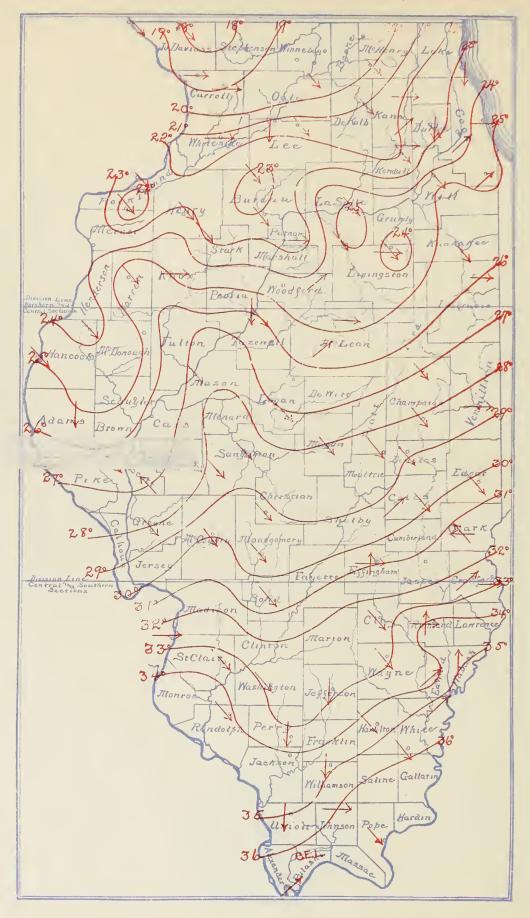
CHIEF OF WEATHER BUREAU

BY

CHARLES E. LINNEY,

OBSERVER AND SECTION DIRECTOR, CHICAGO, ILL.





# CLIMATE AND CROP SERVICE

OF THE

### WEATHER BUREAU.

Central Office, WASHINGTON, D. C.)

WILLIS L. MOORE, Chief.

### ILLINOIS SECTION,

CHARLES E. LINNEY, Section Director,

CHICAGO, H.L.

VOL. II.

CHICAGO, ILL.

NO. 12.

We wish to thank the Observers for their general and hearty holiday greeting.

Thunderstorms occurred along the northwest corner of the state on the night of the 9th.

Auroras were observed in the northern section on the 7th, 8th, 9th, 19th, 20th, 21st, 26th, 29th and 30th.

Fog was general over the whole state on the 9th, and over the north half on the 14th; while tendency toward fog was noted on the 3d, 10th, 12th, 21st, 26th and 28th.

Solar halos occurred on the 1st, 2d, 5th, 18th, 19th, 21st, 22d, 23d, and from the 25th to the 30th; lunar halos on the 1st, 2d, 5th, 7th, 8th, 15th, 26th, 28th, 29th and 30th.

Sleet storms were numerous, those of the 3d-4th, 16th-17th and 19th-20th, being most severe and general, but sleet also fell on the 2d, 5th, 6th, 10th, 13th, 14th, 25th, 28th, 30th and 31st.

The difference in temperature between the northern and southern sections was clearly seen during December; a minimum of 18° below zero was recorded in the former and no zero readings were recorded in the latter.

Some of our Observers are still mixed as to the proper time to end the day. It should be borne in mind that a day ends (and begins) at midnight, and not in the morning; but since it impossible for an observer to record the meteorological elements at the midnight hour, the next best thing is some evening hour toward the close of the day. Hence it is that 7, 8, or 9 p. m., should be chosen as the hour when both thermometers should be read and both set, the rainfall and snowfall measured and the record for the day completed. A single observation in the evening hour may be made to complete the record for the day accurately and well, but at any other hour of the day conflicts, errors and omissions are almost sure to arise.

The temperature of the month of December averaged 2.4° below normal; the last half of the month proving quite severe. The month began with comparatively even temperatures which gradually rose to the maximum of the month on the 9th and 10th; then followed lower temperatures until the night of the 16th when a marked cold wave swept over the state, accompanied by rain which turned rapidly to sleet and snow. The temperature continued to fall during the 17th reaching the lowest temperature of the month generally on the morning of the 18th. A second cold wave swept over the state on the morning of the 21st, but was not so severe as the first. The lowest temperatures in the second cold period were recorded in the northern section on the 22d and 24th and it the southern on the 24th. At the close of the month the temperature had risen generally and mild winter weather prevailed.

The 18th day was the coldest of the month, with an average temperature of 7°; the average in the northern section was just zero, a very marked decrease in temperature occurring between the northern and southern sections. The lowest temperature observed was —18° at Scales Mound on the 18th. The warmest day of the month was the 10th, with an average temperature of 48°; highest recorded 72° at Albion on the 10th. This gives an extreme range of 90°, while the average of the greatest daily range for the state was but 30°.

The precipitation of the month averaged 2.38 inches, which is about 0.07 of an inch below normal; the southern half of the state generally exceeding the normal. The first rain period passed over the state from the 2d to the 5th; the second on the 10th; the third on the 13th and 14th; fourth on the 17th; fifth on the 20th, and scattered snow flurries prevailed from the 27th to the close of the month. The storm on the night of the 16th and during the 17th was the heaviest, giving an average of 0.55 of an inch precipitation for the state; the rain on the night of the 9th and during the 10th was also a good general rain. The greatest fall observed was 5.15 inches at Cobden, closely followed by 5.12 inches at McLeansboro; the least fall measured was 0.81 of an inch at Sycamore. The greatest in any 24 hours was 2.06 inches at Herrin on the 16th-15th.

The snowfall of the month was mostly confined to the last half, and averaged 5.0 in. for the state as a whole; the northern section having 6.5 inches and the southern 2.5. The protection afforded winter grain by the snow was good during the severe weather of the month.

There was an average of 9 days with 0.1 of an inch or more precipitation; also 7 clear, 7 partly cloudy and 17 cloudy days during the month; the southern half of the state experiencing much cloudy weather.

The prevailing wind direction of the month was NW. with an average hourly velocity of 10.0 miles; highest velocity 56 miles from the SW. at Chicago on the 16th. The air pressure of the month averaged 30.11 inches; highest 30.74 at Galva on the 18th; lowest 29.46 at Cairo on the 18th, a range in pressure of 1.28 inches.

#### OBSERVERS NOTES.

COBDEN.—The heavy sleet of the 17th and 20th damaged many fruit trees.

John Buck.

Ottawa.—Rivers were clear of ice on the 10th but closed again on the 18th.

J. O. Harris.

CARLINVILLE.—On the 16th-17th an inch and a half of small hail (snow pellets) fell.

R. O. Purviance.

MARTINSVILLE.—Wheat was looking fairly well until the sleet of the 16th, and it remained covered until the 30th.

J. B. Sheapley.

Knoxville.—December was a fairly good month for business; hogs, cattle and grain moving to market, and all kinds of stock doing well.

C. N. Butt.

Lanark.—The aurora observed here on the evening of the 20th was a beautiful one; at times it was light enough to read a newspaper without other light.

M.N. Wertz.

Robinson.—Heavy sleet on the 17th did quite a little damage to fruit and shade trees, telegraph and telephone lines; it remained on the trees more than a week.

A. P. Woodworth.

NEW BURNSIDE.—The most brilliant lunar halo ever obsered by us was seen on the night of the 7th at 6 o'clock, four very bright rings appeared, with all the colors of the rainbow.

Geo. Harris.

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CHARLESTON.—The Embarrass River closed on the 18th and on the 27th ice was four inches in thickness. During the night of the 19th sleet covered everything: it disappeared from the trees on the 24th and from the ground on the 30th; several persons were injured by falls.

Jacob B. Dazev.

WINCHESTER.—The first half of the month roads were very muddy and almost impassable, on the 15th the ground froze hard and left the roads very rough. On the 16th we had two inches of wet snow that ended in a light rain which froze as it fell leaving everything covered with snow and ice; some of it still remains. As there is snow mixed with the ice I think it affords good protection to the young wheat, which is very promising at present. Geo. Hurd.

A few observers are still bothered with temperature readings below zero. These should be recorded with a slight dash, or minus sign (—), before the reading, thus —5°, —9°, —15°. To secure the mean temperature for the day, if the maximum temperature is above zero and the minimum below, subtract the latter from the former and divide the remainder by two, thus max. 20°, min. —6°, daily mean 7°; when both are below zero add them and divide their sum by two, prefixing the minus sign, thus max. —5°, min. —11°, daily mean —8°. In securing the mean for the month you

can follow one of two plans: first, add all the readings above zero, omitting the readings below zero, then add them separately and subtract their sum from the sum of the readings above zero, and divide the remainder by the number of days in the month: or second, you can add the column including the readings below zero, then add the readings below zero separately, double them and subtract from the sum of the column, dividing the remainder by the number of days in the month. All of these peculiarities are caused by the fact that a reading below zero is consider algebraically, and the minus sign applies.

The month of December was considered generally favorable to winter grains and grasses. The first half was comparatively mild, with little or no snow covering; then came the heavy falls of sleet and snow of the 16th-17th and 19th-20th covering the ground of most of the state. The depth increasing from about an inch in southern counties to two or more inches throughout the northern section. The first storm came just in advance of the severe cold of the month and proved of much benefit, since temperatures below zero were felt throughout the north half of the state, and sharp freezing weather over the state as a whole. Flurries and light snow afforded some protection until the close of the month and reports generally indicate that grains and grasses are in good condition.

The light precipitation of the month throughout the northern counties has kept streams low and water scarce. Roads were generally rough and although considerable marketing was done it was under great difficulty generally.

A few belated corn fields were husked during the month, but generally little farm work was done. Stock is reported in good condition. Considerable damage was caused to fruit and shade trees by the sleet storms of the 16th-17th and 19th-20th. In the northern section ice of good thickness has been harvested.

Barometer and Wind Table.

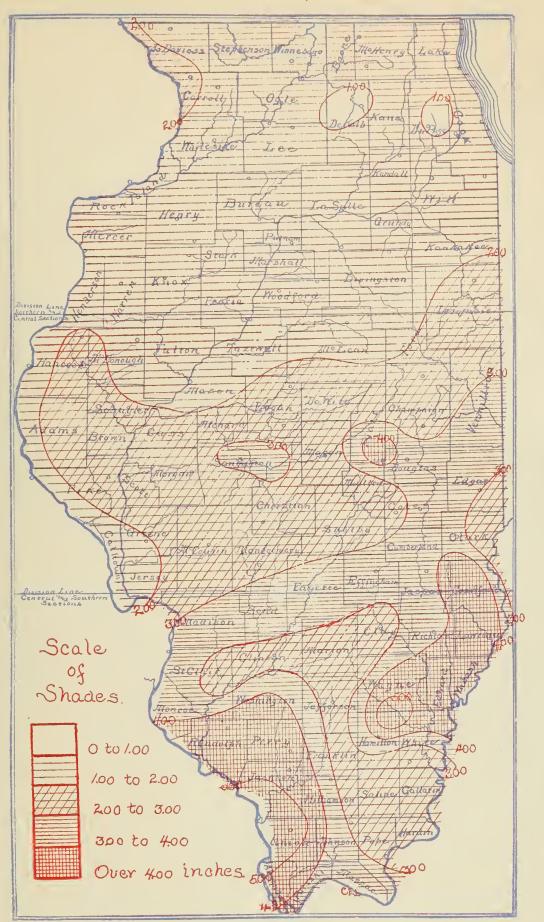
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Note,—Unless otherwise indicated the highest, lowest and mean temperature are from maximum and minimum thermometers. \*Highest and lowest temperature from observed readings. 1. Mean temperature from 7+2+9+9+4:2. 8+8p+2:3. 7+7p+2:4. 8+6p+2:5. 7+4p+2. 8+6p+2:5. | _   |  |  |
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### Daily precipitation for December, 1897.

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ANNUAL SUMMARY. 1897.

## ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

# WEATHER BUREAU.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE.

UNDER DIRECTION OF

### WILLIS L. MOORE

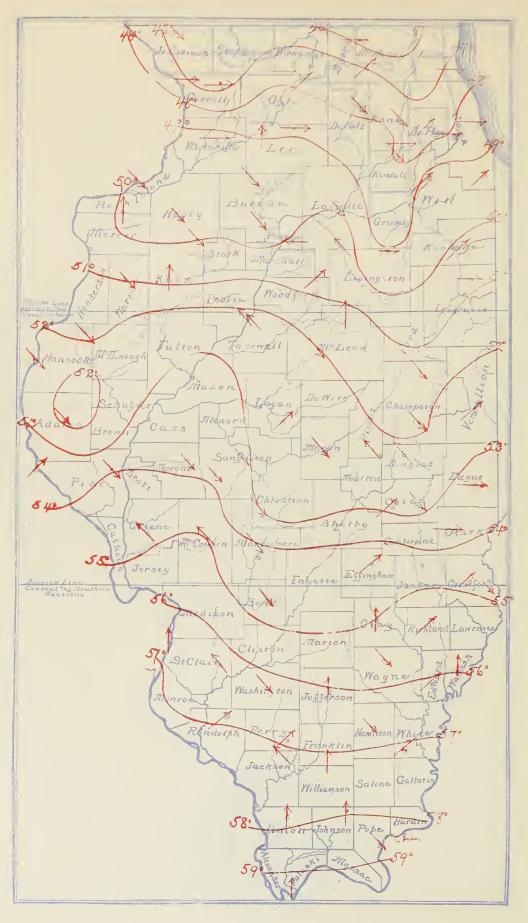
CHIEF OF WEATHER BUREAU

BY

#### CHARLES E. LINNEY,

SECTION DIRECTOR, CHICAGO, ILL.





## CLIMATE AND CROP SERVICE

OF THE

### WEATHER BUREAU.

Central Office, Washington, D. C.

(WILLIS L. MOORE, Chief.

ILLINOIS SECTION,
CHARLES E. LINNEY, Section Director,
CHICAGO, ILL.

Vol. 2.

CHICAGO, ILL.

ANNUAL.

Signs of spring were noted at Charleston on the 14th of February by the appearance of larks and blue birds.

The greatest rainfall in any 24 hours during the year occurred at Robinson on the 4th-5th of March, when 5.97 inches fell.

The extreme south point of the state escaped zero weather throughout the year; the lowest temperature at Cairo was four above.

One Observer was lost during the year through death; four transfers were made; five stations were discontinued and five stations were established.

The greatest monthly precipitation at any station during the year was 12.64 inches at Cobden in March; the least, a trace in September at Carlinville and Havana.

A very large amount of miscellaneous data was accumulated by our observers during the year. From these data it appears that fogs were most prevalent in March; thunderstorms in July; auroras in June; sleet storms in December, and severe local storms in June.

Some very remarkable falls of rain occurred during the month of June; our records show 1.97 inches in 1 h. 25 m. at Aurora on the 18th; 1.40 inches in 40 m. at Dwight on the 17th; 1.04 inches in 30 m. at Coatsburg on the 23d; 2.25 inches in 1 h. and 30 m. at La Harpe on the 30th; 1.50 inches in 35 m. at Mt. Pulaski on the 30th; 1.80 inches in 50 m. at Philo and 1.85 inches in like time at Rantoul on the 23d; and 3.25 inches in 3 h. at Mt. Vernon on the 22d.

The temperature of the year averaged 52.0°, which is about 1.0° more than normal, and about 1.0° less than the temperature of '96. September and October were the exceptionally warm months of the year, and they were also very dry ones; May and December were the months of greatest deficiency. A contrary effect was experienced in '96, when May was the month of greatest excess in temperature and October the greatest deficiency.

The 25th day of January was the coldest of the year, with an average temperature of —6° for the entire state, and on the morning of that day the lowest temperature for the year, —28°, was recorded at Oregon. The warmest day of the year was the 9th of July with an average temperature of 86°. The highest of the year, 108°, did not occur however until the 4th of August; this record was made at Mt. Vernon, and temperatures above 100° were common over the state. This gives an extreme range in temperature of 136°, which is 10° greater than in '96.

Very marked heat periods were experienced from the 12th to the 17th of June; from the 30th of June to the 10th of July; from the 29th of July to the 4th of August, and from the 1st of September until the 16th; even the last part of September and the first of October were very warm for so late in the season. Probably more days with very high temperatures were experienced than for many years past.

Frosts were common in the spring until the 1st of May, and light frosts continued throughout northern counties until the last of May. In the fall the first light frost came on the 20th of August throughout the northern district, and the first severe frost the 20th of September, although some southern stations did not have severe frosts until the last of October.

The precipitation for the year reached 35.35 inches, considering the state as a whole. This is about 2.20 inches less than normal and 1.34 less than in '96. The north half of the state was generally deficient, the south half generally above normal. March was the month of greatest precipitation, reaching nearly six inches, and October the least, amounting to slightly less than half an inch. The greatest amount measured was 53.71 inches at Cobden; the least 22.89 inches at Lanark; the difference between the greatest and least was much more marked than in '96.

The snowfall for the year averaged 24.4 inches, which is probably about the normal fall. The northern district received nearly 38 inches.

There were 149 clear days, 110 partly cloudy days, 106 cloudy days and 98 days with .01 or more precipitation; a larger percentage of sunshine than in '96 and 6 more days with rain.

The prevailing wind direction for the year was NW., with a total movement of 82,949 miles, an average hourly movement of 9.5 miles. This is lower than the two previous years. The highest velocity was 72 miles per hour from the W. at Chicago on July 5th.

The pressure of the air averaged 30.06 inches, which is slightly higher than '94, '95 or '96. The highest pressure of the year was 30.77 inches at Keokuk on the 26th of February; lowest 29.20 inches at Davenport on the 19th of March.

Note.—The precipitation of Danville on page 9, should read: December 2.43 inches, departure —0.82, annual 31.55, departure —3.76 inches.

	List of Volum	tary Observe	rs.
tations.	Observers.	Stations.	Observers.
thern Sec. ton	Ira R. George. Dr. M. M. Robbins. Chas. A Love. S. B. Randall. Jos. Kuhles. Central Offlee. II. K. Smirh. D. Zimmerman. Geo. E. Hunt. @ Eustace Shaw. L. M. Tarr. @ Prof. G. W. Horton. J. S. Dumser. Prof. E. II. Miller. Post Surgeon U. S. A. Prof. F U. White. Clark Hobbrook. E. Ill. Hospital. F. M. Muhlig. F. E. Bellamy. Geo. Stevens. C. N. Butt. Prof. F. E. Sanford M. N. Wertz. Geo. W. Bunker.	Cen. Sec. Con. Danville Decatnr East Peoria. Effingham Griggsville Hannibal, Mo. Havana Hillsboro Keokuk, Ia Lallarpe Lexington Martinsville Mattoon Morrisonville Mt. Pulaskl Palestine Pana Paris Peoria Philo Rantoul Robinson Springfeld	Prof. R. W. Sharpe, Prof. J. H. Coonradt. C. L. Farrington. Alfred Fitch. R. C. Goodrich. Emily R. Gray. R. L. Anderson. @ Genl, J. M. Ruggles. P. J. Edwards. Fred Z. Goscwlsch. @ Frank Campbell. D. F. Trimmer. H. C. Foster. J. B. Sheapley. Jos. Withington. Harry Grundy. Z. K. Wood. John E. Templeton. Will F. Jordan. Paul Huston, Jr. Dr. Fred Brendel. H. A. Burr. H. A. Burr. H. B. Clark. A. P. Woodworth. John Craig. @
Martinton. Minonk Monmouth. Oswego Ottawa Reynolds Riley Reynolds Riley Round Grove. St. Charles Scales Mound Streator Sycamore. Tiskilwa Walnut Wheaton Winnebago. Zion Central Sec. Alexander Atwood Atwood Beardstown. Bloomington Bushnell Carrioliton. Carlinville. Carrollton. Coatsburg	Geo. W. Bunker. O. M. Davison. D. J. Strang. J. S. Seely. Dr. J. O. Harris. Thos. C. Lewis. John West James. Hosmer C. Porter. R. A. Hawley. S. L. Adams. Joseph Vipond. R. Williams. Roswell Dow. W. I. Greeley. O. C. Nussle. Wm. II. Johnson. Frank Osborn. Robert McGrath. George H. Ilall. J. W. C. Gray. W. E. Means. Richard Milner. Prof. M. P. Lackland. Dan E. Zook. R. O. Purviance. Prof. Clyde Slone. Jacob B. Dazey. Dr. J. R. Lambert.	Springfield. Tuscola Winchester Sonthern Sec. Albion Cairo Cairo Carlyle Chester Cobden DuQuoin Friend Grove. Go'conda. Grayville Greenville Itallidayboro.tlerrin Iron Jordans Grove Louisville McLeansboro. Mascoutah Mt. Carmel Mt. Vernon New Burnside Olney Plum Ilill St. John St. Louis, Mo.	B. F. Michels, P. H. Smyth. W. H. Mix. John Forester. John Buck. V. E. Majors. Jas. Hammons, Jr. John B. Starkey. Prof. M. S. Oudyn. E. E. Thornton. D. R. Harrison. W. J. S. Catheart. Belford A. Jenkins. John Judd. Dr. G. Leibrock. Mrs. H. M. Phillips. J. F. Bogan. George flarris. Victor E. Phillips. J. A. Chesney. J. C. Sylvester. Dr. II. C. Frankenfield @

### @. U. S. Weather Bureau Stations.

#### Barometer and Wind Table.

		Ва	romete	٠.				Win	d.	
Stations.						ove- t.	hour-	Max	imum	
	Mean.	Highest.	Date.	Lowest.	Date.	Total move- ment.	Average hour-	Miles.	Direction.	Date.
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Averages	30.06	30.70		29.31		82,949	9.5	72	w.	Jul 5

a, b, e, etc. number of months missing.

RILEY.—The mean temperature of the year (47.0) was 1.5° above normal; maximum 95°, minimum —24°, range 119; total precipitation 25.17 in., was 8.06 below normal; '70, '78, '91 and '96 were warmer; '74 and '89 were drier.

John West James.

Oats, spring wheat and barley seeding was mostly finished the third week in April; pastures and meadows doing well: gardens and potatoes planted and fruits beginning to bloom. Corn planting was generally finished by the 25th of May and cultivators running by the close of the month. Clover haying begun the first week in June and winter wheat cutting the second; wheat showed a marked improvement in filling and turned out well. Early corn was generally laidby the last of June. Timothy having was on hand the middle of July; oats were harvested by the last week in July, and threshing begun. Early corn reached roasting ears the first week in August; fall plowing had begun. Broomcorn and second-crop clover cutting began the third week in August; a general and severe drouth prevailed. Corn was forced to rapid maturity and cutting began the first week in September; no special injury resulted from the frost the 20th of September as cutting was practically finished; fall pastures and potatoes were a failure and plowing extremely difficult. Fall seeding was done under great difficulty, and sown grain practically remained unsprouted until the close of October. Corn husking and cribbing began early and were rapidly finished, the yield proving fair; the apple crop was much reduced by heat and dryness.

The Crop Season of 1897

Forecast Displaymen Stations

	Forecast Disp	olaymen Stations.	
Stations.	Displaymen.	Stations.	Displaymen.
Assumption*17 Alton	1. L. Long. Daily Republican. Chase Dept. Store. The Postmaster.	Oakwood	J. II. Young. John Schmid. W. I. Harris. The Transcript.
Atwood 8 Anrora	Hawks & Helton. C. B. & Q. R. R. The Postmaster. Evening Star. The Postmaster.	Paris         2           Paxton         31           Peoria         4           Pittsfield         11           Polo         1	The Reacon. New York Store.
Bethalto	J. T. Ewan. Weather Bureau. John A. Conrad. The Enquirer. John A. Martin.	Princeton 16 Putnam Quincy Robinson 43 Rochelle	L. E. & St. L. R. O. P. Carroll, J. Stern & Son, The Postmaster,
Carmi .10 Carthage	E. M. Robbins. Jos. Kuhu & Son. The Daily News. Central Office.	Rockford   21   St. Lonis   21   St. Lonis   +   Salem   15	II. C. Feltman.
Chillicothe         .55           Clintou         .18           Cobden         .12           Colfax         .1           Cordoya         .1	The Bullctin, Perry Hoghes, John Buck, D. T. Mitchell, D. Zimmerman,	Seueca Serona Springfield 30 Streator 49 Stockton 18	The Postmaster.
Danville	Schmitt & Heinly. Weather Bureau. The Postmaster. E. J. Sabin. Evening Telegram.	Urbana Vandalia Waterloo Waverly 26 Wankegan	University of III. Jos. Urbani Waterloo Mill Co. The Journal. The Postmaster.
Dubuque	Weather Bureau. H. Wiechelman. W. S. Wetherill. The Dally Journal. Weather Bureau.	Cold Waves and Frost Warnings Only.	J. M. Grimes.
Freeport	Emmert & Burrell. O. F. Clark, John B. Starkey, Prof. M. S. Oudyn, Weather Bureau,	Aledo Aurora Belle Rive Carlyle Crescent City	J. W. Elwards. City Marshal. G. W. Suesbury. The Postmaster. B. Broderick.
Hannibal 73 Hospital 1 Indianapolis 15 Joliet 1 Kankakee	E. III. Asylum. I. D. & W. R. R. Joliet Ptg. Co. F. E. Bellamy. Clty Marshal.	Fairbury Good Hope Griggsville Harvard	Wade Bros. J. B. Kuhn. S. E. Grav.
Kcithsburg         21           Keokuk         17           Kewaunee         33           Kinnundy         26           La Harpe         17	Weather Bureau, Geo. A. Anthony, C. H. Highee, Judd Hartzell,	La Grange Makanda Normal Park Prairie City	F. E. Sanford, F. Hopkins, W. S. Jackman, F. H. Mead,
Leland       .9         Lexington       .24         Lincoln       .4         Marseilles       .27         Martinsville       .14	The Postmaster. G. A. Esslinger. Thos. H. Stokes. D. A. Nicholson. S. A. Fasig.	Cold Waves and Heavy Snows.  Bloomington	City Ry. Co. Ur. & Cham. Ry.
Martinton         .19           Mlnonk         .25           Monticello         .31           Morrison	Jos. H. Peltier. M. H. Pfaffle. The Republican. J. S. Green	Danville Lincoln Mattoon Peorla Qnincy	Street Rv. Co. Electric Rv. Co. P. D. & E. R. R Central Rv. Co. Qulncy Rv. Co.
Mt. Carrolf	W. R. Hostetter, J. F. Bogan, Geo. Harris, R. M. Haskett.	Sparta Terre Haute	Centralia & C. R. Vandalia R. R.

[Figures indicate number of places supplied with forecasts. +Railroad distribution

				Clim	atologica	l dat	a for th	e Yea	ar, 188	7.									
			Temp	erature	(degrees	Fahrer	heit).		Pı	recipita	tion (l	nches)	).		ĺ.,		Sky.		Jo u
Stations.	Counties.	Elevation, feet.	Length of record, years.	Highest.	Date.	Lowest.	Date.	Length of record.	Total for the year.	Greatest monthly.	Month.	Least monthly.	Month.	Total snowfall.	Number rainy days.	Number clear days.	Number partly cloudy days.	Number cloudy days.	Preval'ing direction wind.
RTHERN DISTRICT  Iton  rora  mbridge emung  ICAGO Clear Creck Davenport, Ia Dixon Dubuque, Ia Dwight  Ft. Sheridan Galva Hospital et hwaukee oxville. Grange nark rtinton nonk nmouth Owego Ottawa. Reynolds Riley Roekford Round Grove. St. Charles Scales Mound Streator Sycamore Tiskilwa Walnut Wheaton. Winnebago Zion. Averages, CENTRAL DISTRICT	Lee. *I Kane. I Kane. I Henry Mellenry I COOK Putnam Scott. Lee. I Dubuque Livingston I Lake Henry Kankakee Will Winnebago Knox *5 Cook Carroll *I Iroquois. Woodford Warren Kendall *I Lasalle I Rock Island MeHenry Winnebago Whiteside. * Kane. *1 Jo Daviess LaSalle De Kalb Bureau *3 Bureat DuPage. *3 Winnebago Carroll. *3	833 676 824 820 824 700 613 775 657 693 842 650 775 883 633 745 784 650 800 906 775 657 883 745 775 657 873 745 775 900 900 938	3 49 19 48 5 49 4 45 27 48 10 49 27 50 8 48 24 48 7 49 12 47 5 49 6 49 3 47 8 50 6 48 8 8 46 10 50 15 50 11 50 2 49 3 48 2 49 3 48 3 46 5 5 5 5 6 6 48 4 5 6 6 49 4 5 6 6 49 8 7 49 8 5 8 6 48 8 7 49 8 5 8 5 8 6 6 48 8 7 4 45 8 5 8 6 6 48 8 7 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	0   101   88   97   99   102   93   99   102   93   99   102   93   99   103   99   98   89   93   103   99   104   104   104   105   104   105   104   105	July 9 July 8 July 8 July 3 June 14 July 9 June 17 June 14 July 3 July 3 July 3 July 3 July 3 July 9	-19 -21 -23 -20 -19 -18 -20 -21 -20 -24 -21 -20 -16 -19 -24 -21 -24 -23 -24 -24 -23 -24 -24 -23 -22 -24 -23 -22 -24 -23 -22 -24 -23 -22 -24 -23 -22 -24 -23 -23 -22 -24 -23 -23 -23 -23 -23 -23 -23 -23 -23	Jan. 25 Jan. 25	3 199 15 4 4 277 7 7 19 227 7 6 6 8 8 11 4 4 5 5 13 36 225 3 3 4 4 3 4 4 17 7 15 6 6 5 5 24 4 4 4	24.01 38.26 26.74 37.29 23.85 25.85 31.69 23.87 26.24 28.16 31.88 26.82 25.75 23.47 30.93 27.59 31.86 22.89 29.18 27.32 27.16 25.75 27.69 31.86 31	4. 21 7. 03 4. 90 6. 36 4. 53 3. 05 5. 27 4. 34 4. 41 4. 91 3. 32 6. 67 6. 32 6. 69 5. 58 5. 71 5. 14 5. 26 6. 90 4. 95 4. 45 4. 90 6.	Mar Jan Jun Apr Jun Jun Jun Jun Jun Jan Jun Jun Jun Jun Jun Jun Jun Jun Jun Ju	0.44 0.25 0.23 0.20 0.44 0.36 0.20 0.33 0.39 0.13 0.13 0.15 0.46	Oct Oct Oct Oct Oct Oct Oct Oct Oct Oct	46.0 48.8 49.7 55.5 40.0 35.1 35.3 33.3 35.3 35.3 35.3 35.3 35.3	109 112 78 114 125 74 106 117 113 98 87 104 87 104 87 109 109 109 109 109 109 109 109 109 109	146 129 87 109 137 \$119 121 156 168 181 139 159 169 147 138 155 139 121 147 188 188 195 138 138 138 138 155 138 138 161 151 143	130 121 178 111 110 100 98 122 135 78 109 110 92 122 88 86 145 145 145 145 145 147 147 149 147 149 114	89 115 100 145 144 145 144 99 112 90 125 120 127 74 130 65 121 127 78 131 137 65 111 145 145 145 145 145 145 145 145 14	W. W. W. M. W. W. W. W. W. W. W. W. W. SW. SW. SW.
Alexander Bloomington Bushnell Carlinville Carrollton Charleston Coatsburg Danville Decatur East Pecria Effingham Griggsville Hannibal, Mo. Havana Hillsboro Keokuk, la LaHarpe Lexington Martinsville Mattoon Morrisonville Mt. Pulaski Palestine Peoria Philo Rantoul Robinson Springfield Tuscola Averages	Morgan, McLean McDonough, McCoupin Green Coles. Adams Vermillion. Tazewell Effingham Pike. Marion Mason Montgomery. Lee. Hancock McLean Clark Coles. Charistian Logan Crawford Peoria Champaign Crawford Peoria Champaign Crawford Crawford Peoria Champaign Crawford Sangamon	670 840 662 663 660 720 763 613 685 450 650 534 475 676 676 800 610 731 638 685 500 644	5 53. 6 52. 5 52. 7 55. 12 52. 9 52. 4 52. 6 52. 12 51. 6 54. 16 54. 16 53. 3 54. 26 52. 3 51. 3 51. 17 52. 2 52. 10 54. 42 53. 13 50. 6 51. 2 54. 16 53. 5 52.	104 104 104 104 104 104 104 104 104 104	July 8† July 8 July 8 July 8-9 Sept 12 Sept 15 Aug. 3 June 18 July 9 July 10 Aug. 2-3 June 14 Sept 12 June 14 Sept 12 June 17 Sept 8† July 9 Aug. 3 July 9† Aug. 3 July 8† Aug. 3 July 8 Aug. 3 July 8 Aug. 3 July 8 Aug. 3 July 9† Aug. 3 July 9 Aug. 3 July 9 Aug. 3 July 9 Aug. 3 July 9 Aug. 3 July 9 Aug. 3 July 9 Aug. 3 July 9 Aug. 3 July 9 Aug. 3 July 9	-19 -17 - 8 -12 -14 -17 -13 -16 - 6 -10 -13 - 7 -16 -18 - 18 - 5 - 14 - 6 - 16 - 15 - 16 - 18	Jan. 25 Jan. 26 Jan. 25 Jan. 26 Jan. 25 Jan. 26 Jan. 25 Jan. 26 Jan. 25 Jan. 26 Jan. 25 Jan. 25 Jan. 25 Jan. 25 Jan. 25 Jan. 26 Jan. 25 Jan. 2	55 7 514 13 13 13 10 4 10 23 55 66 66 13 37 27 19 31 11 18 39 9 16 62 22 18 18 24 18 24 18 24 18 24 18 24 18 24 18 24 18 24 18 24 18 24 18 24 18 24 18 24 18 24 18 24 18 24 18 24 18 24 18 18 18 18 18 18 18 18 18 18 18 18 18	34.66 35.55 29.19 37.81 36.53 40.86 37.88 31.55 33.67 27.53 39.71 38.93 33.17 36.86 33.17 36.86 31.42 42.43 36.70 38.57 43.23 44.30 34.56 31.42 44.30 34.56 37.58 37.58	6.05 5.41 5.20 6.54 6.60 7.85 5.98 4.71 7.54 6.64 6.66 6.04 6.75 10.35 6.38 6.02 5.19 11.02 5.39 6.22 6.73 11.33	July Nov Mar July Mar July Jan Mur July Jan July Mar Apr Mar Jun Mar Jan Mar Jan	T. 0.01 0.39 0.34 0.15 0.28 0.09 0.25 0.308 T. 0.24 0.26 0.32 0.32 0.12 0.37 0.04 0.45 0.37 0.37	Sep Oct Sep Aug Sep Oct Sep Oct Sep Oct Sep Oct Sep Oct Sep Oct Sep Oct Sep Oct Sep Oct Aug Oct Sep Oct Sep Oct Sep Oct Sep Oct Sep Oct Sep Oct Sep Oct Sep Oct Sep Oct Sep Oct Sep Oct	31.0 24.9 22.8 15.8 27.3 13.9 20.3 13.0 20.3 13.0 23.0 23.0 23.0 23.0 27.0 12.5 27.2 42.8 17.5 11.5 11.5 24.9 15.2 24.9 15.2 24.9 15.2 15.0 24.9 15.2 15.0 24.9 15.0 25.0 26.0 27.0 27.0 27.0 27.0 27.0 27.0 27.0 27	105 80 74 100 71 120 88 82 103 75 111 198 88 108 75 75 112 102 104 94 78 94 78 113 99 117 1124 96	109 158 149 173 116 160 154 161 161 170 161 170 163 129 162 139 162 139 163 140 165 140 165 140 165 140 165 140 165 166 166 166 166 166 166 166 166 166	177 111 118 93 146 120 86 81 123 98 82 123 143 92 105 68 93 87 72 105 68 93 87 113 117 76 88 81 113 117 167 113 117 167 113 117 167 168 113 114 115 116 116 116 116 116 116 116 116 116	79 96 98 99 103 99 119 98 88 61 103 99 91 111 133 116 117 125 134 127 128 128 128 128 128 128 128 128 128 128	nw. nw. se. se. nw. nw. sw. nw. sw. nw. sw. nw. nw. nw. nw. nw. nw. sw. nw. nw. nw. nw. sw. nw. sw. nw. nw. sw.
SOUTHERN DISTRICT. Albion Cairo Cisne Cobden Friend Grove Goiconda Greenville Hallndayboro Herrin Iron Jordans Grove Louisville McLeansboro Mascoutah Mt. Vernon New Burnside Olney Plum Hill St. John St. Louis, Mo Averages Averages for the	Alexander Wayne Union. *4. Pope. Bond I Jackson *5. Williamson *1 Hamilton St. Clair *5 Jefferson Johnson Richland I WashIngton Perry *1 St. Louis.	520 359 450 656 480 500 635 400 456 436 500 486 571 511 511 500 487 550 480 571	6 56. 27 59. 5 55. 14 57. 3 55. 20 58. 20 54. 7 59. 4 11 56. 12 54. 16 56. 3 3 55. 9 56. 27 57. 56 52. 52.	2 98 99 4 99 4 1002 3 1000 1011 101 101 101 101 101 101 101	Sept 16 July 31+ Sept 12 Aug. 3 Aug. 1+ July 9 June 17+ Aug. 3 July 59 Aug. 29 Aug. 29 Aug. 3 Aug. 3 Aug. 3 Aug. 3 Aug. 3 Aug. 3 Aug. 3 Aug. 3 Aug. 3 Aug. 3 Aug. 3	- 2 - 3 - 3 - 7 - 4 - 2 - 2 - 6 - 5 - 1 - 1 - 2 - 3	Jan. 28 Jan. 76 Jan. 26 Jan. 28 Jan. 27 Jan. 27 Jan. 27 Jan. 28	11 127 7 14 3 24 15 9 4 2 11 24 15 12 3 3 8 18 8 8 27	50. 59 44. 10 50. 93 53.71 50. 81 47. 94 42. 87 44. 48 	10.19 7.50 12.00 12.64 10.67 11.44 7.50 11.98 11.43 9.59 9.0.51 9.42 11.29 9.91 11.29 9.91 11.77 9.43 11.55 8.25 10.41	Mar Mar Mar Mar Mar Mar Mar Mar Mar Mar	0.81 0.40 0.35 0.66 0.09	Oct Sep Aug Oct Aug Sep Sep Sep Sep Oct Aug Aug Oct Aug	11. 5 3. 1 8. 3 8. 4 10. 4 4. 3 27. 6 6. 5 12. 4 3. 0 9. 1 13. 3 3. 3 18. 7 7. 0 3. 5 26. 0 14. 3 16. 6 11. 2 24. 4	104 117 89 110 103 115 103 77 864 77 101 110 104 90 77 88 111 99 75 115 108 98	174 113 188 144 186 192 136 182 \$172 \$153 68 72 \$188 156 143 \$147 156 148 149	90 121 84 143 98 80 100 38 88 83 767 99 123 65 83 114 98 106 90 107	111 131 93 78 81 93 129 145 105 116 813 98 170 112 126 108 120 103 124 110	SW. S. NW. S. NW. SE. S. SW. SW. S. NW. SE. S. NW. SE. S. NW. SE. S. NW. SW. SW. NW. NW.

Note,—Unless otherwise indicated the highest lowest and mean temperature are from maximum and minimum thermometers. \*Highest and lowest temperature from observed readings, 1. Mean temperature from 7+2+9+9+4+2. 8 a + 8 p  $\div$  2: 3. 7 a + 7 p  $\div$  2: 4. 6a + 6 p  $\div$  2: 5. 7 a + 2 p  $\div$  2. +Same temperature occurred on more than one day. T. Trace in precipitation column when amount is less than 0.01 of an inch. §Partially estimated reports | Report incomplete.

	Mon	thly and	annual m	ean temp	eratures f	or the year	ar 1897,	with depa	rtures fro	m the nor	rmal.		
	January	y. Februar	y. March.			June.	July.		1	1		L'December.	Annual.
Stations.	Temperature. Departure.	Temperature.	Temperature.	Temperature.	Temperature.	Temperature.	Temperature.	Temperature. Departure.	Temperature. Departure.	Temperature. Departure.	Temperature.	Temperature.	Temperature.
NORTHERN DISTRICT.	1			1 1			T Je	Te	Ter	Ten	Ten	Tem	Tem
NORTHERN DISTRICT.	18.7 - 2. 20.4 + 1. 21.8 - 2. 21.3 - 3. 18.2 - 1. 21.8 - 2. 20.9 + 1. 20.9 + 1. 20.9 + 1. 20.8 + 1. 20.8 + 1. 20.8 + 1. 20.8 + 1. 20.8 + 1. 20.8 + 1. 20.8 + 1. 20.8 + 1. 20.8 + 1. 20.8 + 1. 20.8 + 1. 20.8 - 2. 20.7 + 0.8 22.0 + 0.2 22.0 - 0.5 22.0 + 0.2 22.0 - 0.5 22.0 + 0.2 22.0 + 0.2 22.0 + 0.2 22.0 + 0.2 22.0 + 0.5 22.0 + 0.5 22.0 + 0.5 22.0 + 0.5 22.0 + 0.5 22.0 + 0.5 22.0 + 1. 22.1 + 1. 22.1 + 1. 22.1 + 1. 22.1 + 1. 22.1 + 1. 22.1 + 1. 22.1 + 1. 23.1 + 1. 24.1 + 1. 24.1 + 1. 25.1 + 1. 26.1 + 1. 2	3 26.6 + 2, 2 27.8 + 4, 4 28.6 + 4.4 32.4.6 + 4.4 32.4.6 + 4.4 32.24.6 + 4.4 32.24.6 + 4.4 32.24.6 + 4.4 32.24.6 + 4.4 32.24.6 + 4.4 32.24.6 + 4.4 32.24.6 + 4.4 32.24.6 + 4.4 32.24.9 + 2.2 27.0 + 4.4 32.24.9 + 2.2 28.8 + 4.4 26.2 + 2.8 29.2 + 5.4 29.3 + 1.3 32.3 + 3.5 32.6 + 1.6 33.1 + 3.6 33.1 + 3.6 33.1 + 3.6 33.1 + 3.6 33.2 + 1.2 33.3 + 1.3 33.3 + 1.3 33.3 + 1.3 33.3 + 1.3 33.3 + 1.3 33.3 + 1.3 33.3 + 1.3 33.3 + 1.3 33.3 + 1.3 33.3 + 1.3 33.3 + 1.3 33.3 + 1.3 33.3 + 3.3 33.3 + 3.3 34.3 + 3.3 34.3 + 3.3 35.3 + 3.3 35.3 + 3.3 36.3 + 3.3 37.7 + 2.7 31.0 + 2.9 31.0 + 2.9 31.0 + 2.9 31.0 + 2.9 31.0 + 2.9 31.0 + 3.3 32.7 + 2.7 33.0 + 3.3 32.7 + 2.7 33.0 + 3.3 32.7 + 2.7 33.0 + 3.3 32.7 + 2.7 33.0 + 3.3 32.7 + 2.7 33.0 + 3.3 32.7 + 2.7 33.0 + 3.3 32.7 + 2.7 33.0 + 3.3 32.7 + 2.7 33.0 + 3.3 32.7 + 2.7 33.0 + 3.3 32.7 + 2.7 33.0 + 3.3 32.7 + 3.3 32.7 + 2.7 33.0 + 3.3 32.7 + 2.7 33.0 + 3.3 32.7 + 2.7 33.0 + 3.3 32.7 +	6 33.4 + 3.6 5 34.0 + 0.4 5 34.0 + 0.4 5 34.0 + 0.4 6 34.7 + 0.7 1 35.2 + 0.3 3 34.0 + 0.3 3 34.0 + 0.3 3 34.0 + 0.3 3 34.0 + 0.3 3 34.0 + 0.3 3 34.0 + 0.3 3 34.0 + 0.3 3 32.0 + 1.3 3 32.0 + 1.3 3 32.0 + 1.3 3 32.0 + 1.3 3 33.5 + 1.2 3 33.5 + 1.2 3 33.5 + 1.2 3 33.5 + 1.3 3 32.6 + 1.8 3 33.1 + 1.9 3 30.9 - 1.3 3 32.1 + 1.9 3 33.5 + 1.1 3 34.0 + 2.2 3 33.2 + 1.1 3 34.0 + 2.2 3 33.3 + 2.4 4 3.0 + 2.2 3 33.3 + 2.4 4 3.0 + 2.2 3 33.4 + 0.3 3 38.0 + 2.5 3 38.8 + 3.2 3 32.0 + 0.9 4 3.3 + 2.4 4 1.4 4 2.0 + 3.4 4 1.8 4 3.0 3 38.6 4 1.7 5 38.8 4 4.2 4 1.0 4 1.0 4 1.0 4 1.0 5 1.0 6 1.1	47.2 - 2. 45.8 - 2. 48.2 - 4. 45.0 - 4. 45.0 - 0. 48.0 - 1. 49.0 - 1. 49.0 - 1. 49.0 - 1. 49.1 - 3. 47.1 - 3. 47.6 - 2. 47.1 - 3. 47.6 - 2. 47.1 - 3. 47.6 - 2. 47.1 - 3. 47.6 - 2. 47.1 - 3. 48.0 - 2. 47.1 - 3. 48.0 - 1. 48.0 - 1. 48.0 - 1. 48.0 - 1. 49.2 - 3. 49.2 - 1. 46.6 - 2. 49.2 - 1. 46.6 - 2. 49.2 - 1. 46.6 - 2. 49.2 - 1. 48.7 - 0. 48.7 - 0. 48.7 - 0. 48.7 - 0. 48.7 - 0. 48.7 - 0. 48.8 - 0. 45.6 - 1. 45.8 - 0. 45.8 - 0. 45.8 - 0. 45.8 - 0. 45.9 - 0. 45.1 - 0. 45.2 - 0. 46.3 - 0. 45.2 - 0. 46.4 - 1. 45.3 - 0. 45.2 - 0. 46.4 - 1. 45.4 - 1. 45.4 - 1. 45.4 - 1. 45.5 - 0. 46.6 - 2. 46.6 - 2. 46.6 - 2. 46.6 - 2. 46.6 - 2. 46.6 - 2. 46.6 - 2. 46.6 - 2. 46.6 - 2. 46.6 - 3. 47.1 - 1. 48.8 - 0. 49.2 - 2. 46.6 - 2. 46.6 - 3. 47.2 - 0. 48.9 - 0. 49.2 - 0. 49.2 - 0. 40.2 - 0. 41.9 -	6	70.2 — 0.6 67.0 — 2.2 69.8 — 3.4 69.4 — 1.4 69.8 — 1.1 70.4 — 0.4 69.8 — 1.1 70.1 + 0.2 69.8 — 1.2 70.1 + 0.2 69.9 — 2.0 69.9 — 2.0 69.2 — 1.8 67.2 — 1.8 67.2 — 1.8 67.2 — 2.7 70.8 — 1.7 71.6 — 0.1 66.0 — 2.5 66.2 — 2.7 70.8 — 0.7 71.0 — 1.2 66.0 — 0.7 67.6 — 1.2 66.0 — 0.7 66.1 — 2.9 66.1 — 0.7 68.2 — 0.7 70.3 — 0.7 71.4 — 0.6 66.6 — 0.7 71.4 — 0.6 71.4 — 0.6 66.6 — 0.7 71.4 — 0.6 71.4 — 0.5 71.4 — 1.3 71.6 — 1.3 72.9 — 1.8 73.3 — 0.1 74.2 — 0.6 79.0 — 0.7 70.0 — 1.3 70.0 —	77. 5 + 3. 77. 6 + 4. 77. 6 + 6. 77. 72. 8 + 2. 77. 74. 4 + 2. 77. 74. 4 + 2. 77. 75. 6 + 1. 75. 6 + 1. 75. 6 + 1. 75. 6 + 1. 75. 73. 74. 74. 76. 73. 74. 74. 76. 74. 74. 76. 75. 74. 75. 76. 76. 76. 76. 77. 76. 76. 76. 77. 76. 76. 76. 77. 76. 76. 76. 77. 76. 76. 76. 77. 76. 76. 76. 77. 76. 76. 76. 77. 76. 76. 76. 77. 76. 76. 76. 77. 76. 76. 76. 77. 76. 76. 76. 77. 76. 76. 76. 76. 76. 76. 76. 76. 76.	5 70.5 — 1.6 6 67.9 — 3.4 70.1 — 3.2 2 69.0 — 1.9 2 69.0 — 1.9 3 70.8 — 2.0 4 69.2 — 2.0 68.8 — 3.2 68.6 — 2.9 68.8 — 1.4 69.0 — 2.1 67.4 — 1.8 70.5 — 0.3 70.4 — 2.9 70.5 — 0.3 70.4 — 2.9 70.5 — 0.3 70.4 — 2.9 70.7 — 1.5 71.1 — 0.9 76.9 — 1.5 71.1 — 0.9 71.6 — 1.4 68.9 — 66.4 70.5 — 2.2 70.7 — 1.4 69.0 — 60.4 70.7 — 1.4 69.0 — 60.4 71.6 — 6.6 71.7 — 70.7	70.3 + 4.8 66.9 + 3.2 70.1 + 5.2 66.9 + 3.5 70.2 + 5.5 70.2 + 5.5 70.2 + 5.5 70.2 + 5.5 70.2 + 5.5 70.2 + 5.5 70.2 + 5.5 70.2 + 7.2 669.9 + 6.7 67.1 + 3.9 67.1 + 2.9 68.1 + 4.1 67.3 + 3.1 71.0 + 6.1 67.3 + 4.1 67.3 + 4.1 70.6 + 7.3 771.6 + 5.0 68.8 + 4.4 770.6 + 5.0 68.8 + 5.5 78.8 + 5.5 78.8 + 5.5 78.8 + 5.7 79.9 + 5.3 79.9 + 5	56.6 + 7.8 55.7 + 5.0 55.7 + 5.0 55.2 + 6.7 55.4 + 6.4 55.3 + 6.5 55.3 + 6.5 55.3 + 6.5 55.3 + 6.5 55.4 + 7.7 55.4 + 6.2 57.4 + 7.7 55.9 + 8.0 55.5 + 9.1 55.5 + 6.1 55.5 + 9.1 55.5 + 9.1 56.3 + 9.7 56.4 + 7.9 56.4 + 7.9 56.4 + 7.9 56.5 + 5.5 56.6 + 5.5 56.6 + 5.5 56.6 + 5.5 56.6 + 7.9 56.6 + 7.9 56.7 + 5.9 56.7 + 5.9 56.7 + 5.9 56.8 + 7.9 56.8 + 7.9 56.8 + 7.9 56.8 + 7.9 56.8 + 7.9 56.8 + 7.9 56.9 +	35.9 + 1.7 36.4 + 1.6 37.4 + 1.6 37.4 + 1.5 37.8 + 0.8 37.4 + 1.5 37.8 + 1.9 37.8 + 1.9 37.9 + 1.7 37.7 + 2.7 37.7 + 2.7 37.7 + 2.7 37.7 + 2.7 37.7 + 2.7 37.7 + 2.7 37.7 + 2.7 37.7 + 2.7 37.7 + 2.7 37.7 + 2.7 37.8 + 0.2 37.9 + 1.1 37.9 + 1.6 37.9 + 1.6 37.9 + 1.6 37.9 + 1.6 37.9 + 1.6 37.9 + 1.6 37.7 + 1.4 37.0 37.8 + 0.1 37.9 + 0.2 37.7 + 1.4 37.0 37.8 + 0.1 37.9 + 0.2 37.7 + 1.4 37.0 37.8 + 0.1 37.9 + 0.2 37.7 + 1.4 37.0 37.8 + 0.1 37.9 + 0.2 37	7 21. 1 - 4. 2 2 22. 7 - 3. 8 1 23. 8 - 2. 7 19. 9 - 6. 3 2 25. 0 - 4. 2 2 22. 9 - 4. 9 19. 6 - 6. 5 2 25. 6 - 5. 7 2 2. 2 - 4. 4 19. 6 - 6. 5 2 3. 5 - 7. 5 2 3. 7 - 3. 8 19. 0 - 8. 8 2 4. 0 - 4. 6 2 5. 6 - 3. 3 2 1. 7 - 6. 0 2 2. 1 - 2. 5 2 2. 1 - 2. 5 2 3. 2 - 3. 5 1 5. 0 - 5. 4 2 2 5. 6 - 3. 3 2 1. 4 - 5. 1 2 0. 2 - 2. 1 2 0. 5 - 6. 8 2 1. 8 - 3. 6 2 2 1. 9 - 5. 4 2 2 1. 0 - 5. 5 2 3 3 0. 0 - 3. 7 5 2 5. 5 2 3 3 0. 0 - 3. 7 5 2 5 5 2 3 3 0. 0 - 3. 7 5 2 5 5 3 3 0. 0 - 2 5 3 3 3 0 - 2 5 3 3 0 0 - 2 5 3 3 3 0 - 2 5 3 3 3 0 - 2 5 3 3 3 0 - 2 5 3 3 3 0 - 2 5 3 3 3 0 - 2 5 3 3 3 0 - 2 5 3 3 3 0 - 2 5 3 3 5 3 3 5 - 3 5 3 3 5 - 3 5 3 5	49.0 + 0 + 0 + 0 + 0 + 0 + 0 + 0 + 0 + 0 +

Note,—Unless otherwise indicated the mean temperatures are from maximum and minimum thermometers. 1. Mean temperature from 7+2+9+9+4; 2. 8 a + 9+2; 3. 7a+7p+2; 4. 6a+6p+2; 5. 7a+2p+2; 6. 7+7+1+7+2. §Partially estimated reports. Report incomplete.

				TAT	on th	w mc	vim	m ter	nner	ature	s for	the.	vear	189	7. w	ith d	ates.							
Monthly maximum temperatures for the year 1897, with  Japuary. February. March. April. May. June. July. August.															Septem	ber.	Octob	per.	Noven	ber.	Decen			
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Monthly and annual precipitation for the year 1897, with departures from the Normal.

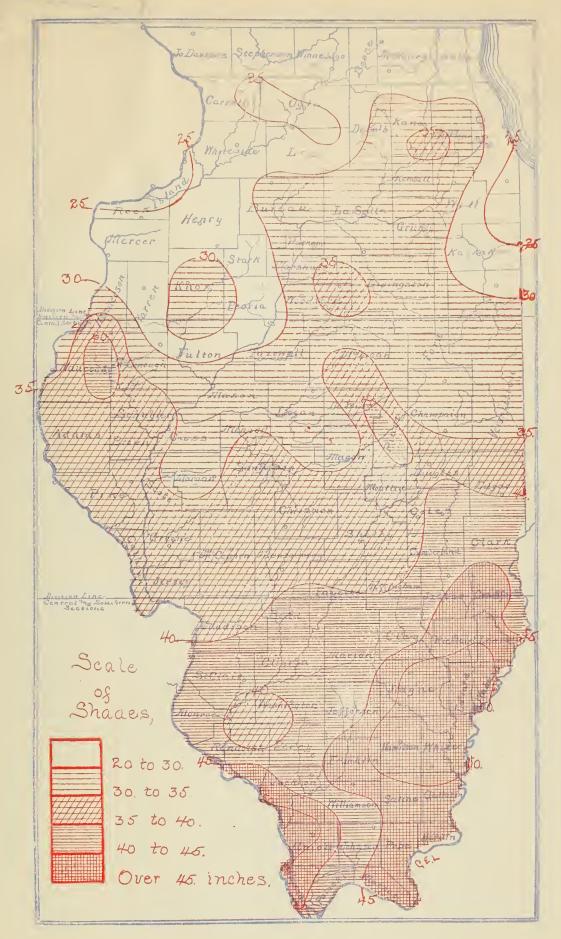
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| NORTHERN SECTION.  Ashton Amora Cambridge Chemung CHICAGO Clear Creek Davenport, la Dixon Dubnque, la Dwight Pt. Sheridan Galva Joliet Kishwaukee A Knoxville LaGrange Lanark Martinton Minonk Moumouth Moswego Ottawa Reynolds Riley Rockford Round Grove St. Charles Scales Mound Streator Sycamore Tiskilwa Walnut Wheaton Winnebago Zion Averages  | 7.03<br>5.06<br>4.53<br>5.47<br>7.55<br>5.47<br>7.55<br>5.44<br>4.91<br>6.67<br>1.6.37<br>1.6.32<br>6.09<br>8.3.61<br>4.74<br>2.92<br>6.60<br>1.94<br>4.74<br>2.92<br>6.61<br>5.61<br>6.61<br>6.61<br>6.61<br>6.61<br>6.61<br>6.61                                  | +4.47<br>+2.8<br>+2.62<br>+3.33<br>+3.05<br>+1.85<br>+0.87<br>+0.87<br>+2.95<br>+2.17<br>+3.05<br>+2.17<br>+3.45<br>+3.56<br>+3.66<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+3.63<br>+ | 2.12 2.12 2.12 2.12 2.12 2.12 2.12 2.12  | -0.82 +0.27 -0.66 +0.11 +0.01 -0.65 -0.27 +0.43 -0.44 +0.33 -0.43 -1.05 -0.44 -0.68 -0.68 -0.64 -0.67 -0.17 -0.68 -0.64 -0.04 -0.04 -0.04 -0.04 -0.04 -0.04 -0.04 -0.04 -0.04 -0.04 -0.04  | 4. 03<br>5. 28, 3. 56<br>3. 56<br>4. 28, 2. 97<br>3. 57<br>4. 12, 2. 97<br>4. 16, 4. 64<br>4. 64<br>4. 64<br>4. 64<br>4. 64<br>4. 64<br>6. 63<br>6. 67<br>6. 63<br>6. | +2.45, +1.24, +1.87, +1.65, +1.64, +1.87, +1.84, +1   | 2.56<br>3.46<br>4.2.23<br>3.69<br>3.43<br>3.43<br>3.47<br>2.26<br>4.18<br>3.50<br>2.91<br>3.47<br>3.50<br>3.43<br>3.43<br>3.47<br>3.50<br>3.41<br>3.50<br>3.41<br>3.50<br>3.41<br>3.50<br>3.41<br>3.50<br>3.41<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50<br>3.50 | -0.38 +1.31 | 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4.11<br>1.8c<br>2.37<br>3.06<br>4.33<br>1.68<br>1.92<br>4.77<br>3.55<br>2.00<br>4.44<br>1.57<br>3.91<br>3.91<br>3.71<br>4.33<br>3.71<br>4.33<br>3.11<br>3.33<br>3.33<br>3.31<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33<br>3.33 | +1,06<br>  +1,06<br>  +0,29<br>  3 +1,75<br>  3 -0,32<br>  3 +0,13<br>  3 -0,87<br>  7 +1,96<br>  3 +1,15<br>  5 +0,24<br>  2 +1,81<br>  7 -0,83<br>  7 -0,83<br>  7 +0,44<br>  2 +0,84<br>  2 +0,84<br>  2 +0,83<br>  5 -0,67<br>  5 -0,67<br>  5 -0,67<br>  6 -0,81<br>  6 -0,81<br>  6 -0,81<br>  7 -0,81<br>  7 -0,83<br>  7 -0,83<br>  7 -0,93<br>  8 -0,44<br>  9 +0,03<br>  1 +1,02<br>  2 +1,181<br>  1 -0,03<br>  1 +1,02<br>  2 -0,67<br>  3 -0,67<br>  5 -0,67<br>  6 -0,67<br>  7 -0,81<br>   1.67 1.40 1.62 1.40 1.62 1.53 1.53 1.51 1.08 1.59 1.47 1.36 1.42 1.50 1.50 1.50 1.50 1.50 1.50 1.50 1.50 | 0. 73   | 58, 26, 22, 26, 74, 27, 29, 21, 22, 28, 28, 28, 28, 28, 29, 29, 21, 25, 25, 27, 27, 29, 29, 29, 29, 29, 29, 29, 29, 29, 29   | +1.12<br>-5.84<br>+2.34<br>-8.91<br>-0.14<br>-9.28<br>-4.87<br>-7.72<br>+3.92<br>-5.12<br>+1.49<br>-8.15<br>-2.99<br>-0.17<br>10.30<br>-5.05<br>-0.86<br>-3.62<br>-6.23<br>-8.60<br>-6.23<br>-8.60<br>-6.77<br>0.00<br>-6.12<br>-4.92<br>-1.29  |
| Averages CENTRAL SECTION. Alexander Bloomington. Bushnell Carlinville Carrollton Charleston. Coatsburg Danville Decatur East Peoria Effinghain Grafton. Grafton. Grafton. Grafton. Grafton. Griggsville. Hannibal, Mo. Havana Hillsboro. Keokuk, Ia La Harpe. Lexington Loami Morrisonville. Mattoon Morrisonville. Mt. Pulaski Palestine Peoria Philo. Rantoul Robinson Gspringfield. Tuscola. Averages | 6.05<br>5.41<br>5.20<br>3.79<br>4.99<br>4.47<br>6.70<br>3.70<br>6.74<br>4.70<br>10.38<br>5.67<br>4.90<br>10.38<br>5.57<br>4.15<br>5.19<br>3.33<br>4.26<br>4.90<br>4.90<br>4.90<br>4.90<br>4.90<br>4.90<br>6.90<br>6.90<br>6.90<br>6.90<br>6.90<br>6.90<br>6.90<br>6 | +3. 31<br>+3. 22<br>+0. 62<br>+0. 262<br>+2. 22<br>+4. 2. 22<br>+4. 2. 24<br>+1. 55<br>+1. 37<br>+4. 86<br>+4. 86<br>+6.  | 0.83<br>1.77<br>0.66<br>1.62<br>2.1.22<br>2.08<br>3.1.22<br>2.03<br>2.03<br>2.03<br>2.03<br>2.03<br>2.03<br>2.03<br>2                                | 3 -0.87<br>5 -0.35<br>2 -1.32<br>2 -1.32<br>3 -0.78<br>8 -1.45<br>7 -0.98<br>3 -1.18<br>3 -1.18<br>3 -1.18<br>3 -1.18<br>3 -1.18<br>3 -1.19<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.07<br>1.0 | 4.42<br>4.49<br>4.43<br>4.6.72<br>4.63<br>5.26<br>4.86<br>4.24<br>4.86<br>4.24<br>4.53<br>6.04<br>4.53<br>6.04<br>4.30<br>4.11<br>7.27<br>4.30<br>8.32<br>11.72<br>3.82<br>11.73<br>3.41<br>11.33<br>4.47<br>4.4.16  | +2. 25<br>+1. 27<br>+1. 27<br>+4. 13<br>+2. 38<br>+2. 49<br>+2. 49<br>+2. 49<br>+2. 49<br>+2. 49<br>+2. 49<br>+2. 49<br>+2. 49<br>+2. 10<br>+1. 57<br>+3. 34<br>+1. 49<br>+4. 12<br>+7. 63<br>+1. 49<br>+1. 49<br>+1. 47<br>+1.  4.35<br>3.92<br>3.90<br>4.00<br>3.87<br>3.54<br>6.51<br>4.07<br>3.54<br>4.07<br>3.54<br>5.85<br>5.27<br>2.98<br>5.27<br>3.48<br>3.34<br>4.47<br>4.47   | +2.01 -0.03 -0.13 +1.86 | 3.39<br>1.90<br>2.09<br>3.21<br>1.45<br>2.63<br>3.21<br>1.45<br>2.63<br>1.17<br>2.91<br>1.08<br>1.59<br>3.47<br>1.98<br>4.09<br>1.47<br>3.47<br>1.29<br>1.93<br>3.47<br>1.29<br>1.29<br>3.47<br>1.29<br>3.47<br>1.29<br>3.47<br>2.23<br>3.47<br>2.23<br>3.47<br>2.24<br>3.47<br>3.47<br>3.47<br>3.47<br>3.47<br>3.47<br>3.47<br>3.4  | -0.65 -2.26 -1.38 -1.38 -1.39 -1.40 -1.71 -1.82 -2.44 -1.40 -1.40 -1.82 -2.87 -2.39 -0.37 -1.56 -0.33 -1.59 -0.37 -2.49 -0.55 -1.91  | 4.52<br>3.49<br>4.82<br>2.82<br>2.82<br>3.91<br>4.58<br>4.58<br>5.49<br>5.45<br>3.58<br>3.58<br>3.93<br>5.80<br>4.31<br>6.77<br>3.61<br>6.73<br>3.69<br>4.11                         | +0.57<br>+0.29<br>-0.02<br>-0.76<br>+0.73<br>+1.34<br>+0.45<br>+1.80<br>+0.84<br>+1.87<br>-0.52<br>-0.52<br>-0.52<br>+1.72<br>-0.52<br>+3.32<br>+4.02<br>+3.32<br>+4.02<br>+3.42<br>+4.02<br>+3.42<br>+4.02<br>+4.03<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04<br>+4.04 | 2.41<br>3.91<br>4.68<br>3.33<br>6.54<br>7.85<br>2.12<br>2.11<br>2.11<br>4.50<br>8.5.22<br>5.16<br>3.87<br>6.38<br>4.41<br>2.30<br>3.63<br>3.63<br>3.63<br>3.63<br>3.63<br>3.63<br>3.63<br>3  | -3.28<br>+0.17<br>+0.17<br>+0.23<br>-1.86<br>-0.08<br>-1.86<br>-0.34<br>+1.50<br>+4.94<br>-0.34<br>+1.50<br>-0.91<br>-1.68<br>-0.91<br>-1.68<br>-0.91<br>-1.68<br>-0.91<br>-1.68<br>-0.91<br>-1.68<br>-0.91<br>-1.69<br>-0.91<br>-1.69<br>-0.91<br>-1.69<br>-0.91<br>-1.69<br>-0.91<br>-1.69<br>-0.91<br>-1.69<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91<br>-0.91 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2.20<br>1.50<br>0.53<br>1.65<br>0.01<br>0.39<br>1.22<br>0.74<br>1.40<br>0.50<br>1.24<br>2.16<br>0.65<br>1.86<br>0.50<br>1.24<br>2.10<br>0.25<br>1.86<br>0.50<br>1.24<br>2.10<br>0.50<br>1.22<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>1.24<br>0.50<br>0.50<br>0.50<br>0.50<br>0.50<br>0.50<br>0.50<br>0.5  | +0.55<br>-0.69<br>-2.30<br>-2.30<br>-2.51<br>-2.12<br>-0.74<br>-0.50<br>-1.05<br>-1.05<br>-1.25<br>-1.25<br>-1.21<br>-2.18<br>-1.77<br>-2.48<br>-1.77<br>-2.48<br>-1.77<br>-2.48<br>-1.77<br>-2.48<br>-1.77<br>-2.48<br>-1.77<br>-2.48<br>-1.77<br>-2.48<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79<br>-1.79 | 0.24<br>2.08<br>1.16<br>1.16<br>1.67<br>0.41<br>1.15<br>0.41<br>1.15<br>0.45<br>0.45<br>0.40<br>1.39<br>0.57<br>1.29<br>0.47<br>1.29<br>0.47<br>1.29<br>0.49<br>1.39<br>0.49<br>1.39<br>0.49<br>1.69<br>0.49<br>1.69<br>0.49<br>1.69<br>0.49<br>1.69<br>0.49<br>1.69<br>0.49<br>1.69<br>0.49<br>1.69<br>0.49<br>1.69<br>0.49<br>1.69<br>0.49<br>1.69<br>1.69<br>1.69<br>1.69<br>1.69<br>1.69<br>1.69<br>1.6 | -2.41<br>-3.30<br>-3.23<br>-2.54<br>-1.18<br>-2.54<br>-1.18<br>-2.67<br>-3.02<br>-2.70<br>-3.34<br>-2.67<br>-2.58<br>-2.67<br>-1.181<br>-1.192<br>-2.52<br>-2.72<br>-3.34<br>-1.181<br>-2.52<br>-2.11<br>-1.142<br>-2.52<br>-2.72<br>-3.34<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32<br>-3.32 | 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-0.68<br>-0.17<br>-0.64<br>-2.000<br>-0.91<br>-1.94<br>-0.58<br>-0.35<br>-1.84<br>-2.05<br>-1.84<br>-2.25<br>-2.25<br>-2.25<br>-0.58<br>-2.25<br>-0.24<br>-0.29<br>-0.24<br>-0.29<br>-0.29<br>-0.24<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25<br>-0.25 | 3.55<br>5.00<br>2.77<br>5.00<br>5.44<br>5.59<br>4.55<br>2.21<br>4.90<br>6.00<br>5.88<br>6.07<br>5.28<br>6.07<br>5.28<br>6.07<br>5.28<br>6.07<br>5.28<br>6.07<br>5.28<br>6.07<br>5.28<br>6.07<br>6.07<br>6.07<br>6.07<br>6.07<br>6.07<br>6.07<br>6.07   | 0 +1.27<br>7 +0.40<br>7 +0.40<br>50 +2.53<br>6 +1.11<br>7 +1.88<br>7 -0.33<br>6 +1.11<br>1 -0.23<br>1 +0.97<br>8 +0.96   | 2.42<br>2.06<br>2.89<br>1.94<br>2.89<br>2.25<br>2.26<br>2.34<br>1.43<br>3.14<br>2.72<br>2.34<br>1.86<br>1.82<br>2.82<br>2.10<br>1.47<br>2.73<br>2.25<br>2.25<br>2.35<br>3.18<br>6.26<br>2.25<br>2.35<br>3.18<br>6.26<br>2.27<br>3.36<br>3.36<br>3.36<br>3.36<br>3.36<br>3.36<br>3.36<br>3.3  | -0.66 -0.45 +0.43 +0.43 +0.43 +0.43 +0.57 +0.57 +0.53 +0.66 -0.66 -0.66 -0.66 -0.71 +0.68 +0.27 +0.18 +0.46 +0.27 +0.18 +0.46 +0.27 +0.18 +0.46 +0.47 +0.58 | 34. 66<br>35. 55. 29. 19<br>37. 81<br>36. 53. 36. 20<br>37. 88<br>32. 22. 27. 53<br>38. 03. 36. 20<br>38. 03. 31. 72<br>33. 17. 22<br>33. 17. 22<br>33. 17. 22<br>42. 43. 36. 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| southern section.  Albion Cairo. Carlyle Carlyle Chester Cisne Cobden. Friend Grove e Golconda. Greenville Hallidayboro Jordans Grove Louisville McLeansboro. Mascoutah Mt. Carmel Mt. Vernon New Burnside. Olney. Plum Hill St. John. St. Louis, Mo. Averages State averages  | 3.73<br>3.89<br>4.04<br>4.13<br>3.82<br>4.47<br>3.62<br>4.49<br>4.97<br>3.31<br>3.16<br>3.93<br>4.71<br>4.52<br>3.57<br>2.70<br>3.77<br>3.86  | +1.41<br>+0.08<br>+0.99<br>-0.35<br>+1.19<br>+0.65<br>+0.65<br>+1.31<br>+1.51<br>+0.65<br>+1.35<br>+1.59<br>+1.59   | 4.08<br>3.95<br>2.75<br>2.81<br>3.70<br>4.47<br>4.00<br>5.13<br>3.25<br>2.37<br>4.00<br>3.35<br>4.10<br>3.35<br>4.10<br>3.35<br>4.10<br>3.35<br>4.10 | 3 +1.22<br>5 -0.01<br>1<br>0 +1.47<br>7 +0.76<br>2 +0.62<br>3 +1.13<br>6 -0.13<br>4 -0.20<br>7 -0.47<br>9 +0.45<br>9 +0.45<br>9 +0.38<br>9 +0.38<br>9 +0.38  | 10.19<br>7.50<br>10.24<br>8.34<br>12.06<br>11.67<br>11.44<br>7.50<br>11.98<br>10.51<br>10.22<br>11.29<br>9.91<br>10.22<br>10.18<br>10.97   | +6.55<br>+3.74<br>+6.85<br>+7.81<br>+8.08<br>+6.26<br>+7.13<br>+4.22<br>+7.75<br>+5.43<br>+7.53<br>+7.53<br>+7.53<br>+7.51<br>+7.61<br>+7.61<br>+7.61  
   | 7.47<br>6.49<br>4.45<br>6.28<br>5.51<br>8.00<br>7.65<br>3.90<br>5.15<br>3.55<br>6.20<br>4.47<br>5.82<br>6.49<br>5.13   | +3.79<br>+2.61<br>+0.42<br><br>+2.80<br>+4.14<br>+4.21<br>+3.87<br>-0.71<br>+1.29<br>-0.79<br>+1.97<br>+3.72<br>-0.95<br>+2.41<br><br>+1.63<br>+1.48  |
2.62<br>1.12<br>2.77<br>3.16<br>2.18<br>2.08<br>2.94<br>1.70<br>0.91<br>2.68<br>1.57<br>2.31<br>2.53<br>2.27<br>3.14<br>1.30<br>1.40<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50<br>1.50 | -2.00<br>-2.71<br>-1.14<br>  | 4.34<br>6.87<br>3.50<br>9.60<br>4.47<br>4.67<br>5.52<br>3.58<br>3.37<br>4.28<br>4.28<br>5.52<br>4.83<br>3.15<br>7.49<br>4.15   | -0.14<br>+2.43<br>-1.03<br>-1.24<br>+1.05<br>-0.74<br>-1.67<br>+0.04<br>+1.01<br>+0.54<br>-0.72<br>-0.72<br>-1.01   | 4.82<br>2.76<br>4.23<br>3.05<br>6.93<br>2.99<br>3.84<br>5.69<br>2.32<br>0.93<br>3.43<br>3.27<br>3.10<br>3.00<br>5.81<br>2.85   | +0.48<br>-0.69<br>+0.76<br><br>-0.76<br>-0.36<br>+0.46<br>+1.93<br>-1.66<br>-1.71<br>+0.28<br>+0.25<br><br>-0.77<br>+0.17  
  | 0.89<br>0.21<br>1.36<br>0.42<br>1.01<br>1.36<br>2.61<br>0.49<br>0.39<br>1.70<br>0.14<br>0.59<br>0.77<br>0.81<br>0.40   | -1.95 -2.27 -1.59 -1.76 -2.69 -2.03 -1.27 -0.29 -2.75 -3.27 -2.10 -2.15 -2.52 -2.52   | 0.53<br>0.09<br>0.75<br>0.87<br>1.10<br>0.18<br>0.64<br>0.24<br>0.63<br>1.00<br>0.64<br>0.63<br>1.00<br>0.41<br>1.18  | -2.03<br>-2.99<br>-1.67<br>-2.09<br>-2.84<br>-2.35<br>-1.34<br>-2.29<br>-2.50<br>-2.12<br>-2.56<br>-2.59<br>-1.99<br>-3.23  
  | 0.91<br>0.64<br>0.17<br>0.66<br>0.77<br>0.53<br>1.29<br>0.59<br>1.61<br>0.37<br>0.45<br>0.40<br>0.58<br>1.20<br>0.52<br>0.52  | -1.84<br>-0.82<br>-0.68<br>-2.65<br>-1.27<br>-1.29<br>-1.83<br>-0.51<br>-0.98<br>-1.71<br>-1.167<br>-1.167<br>-1.22  | 5.55<br>5.4<br>4.55<br>6.44<br>5.1<br>7.0<br>4.2<br>7.1<br>3.55<br>4.66<br>4.60<br>4.00<br>6.54<br>5.4   | 0 +2.010<br>3 +0.633<br>1 +2.74<br>3 -0.26<br>9 +2.89<br>9 +2.89<br>5 +0.55<br>5 +0.55<br>5 +1.64<br>8 +1.64<br>8 +1.64<br>9 +2.42<br>0 -2.42<br>0   | 3.69<br>2.75<br>4.77<br>3.99<br>5.15<br>4.49<br>3.38<br>3.38<br>4.13<br>2.95<br>5.12<br>2.73<br>4.89<br>2.71<br>3.86<br>3.86<br>3.38<br>4.13   | +0.36<br>+0.48<br>  |
44.10<br>48.92<br>50.93<br>53.71<br>50.81<br>47.94<br>42.87<br>44.48<br>37.53<br>40.61<br>52.02<br>41.17<br>47.77<br>41.03<br>43.87<br>47.94   | +3.13<br>+2.67<br>  |

<sup>+</sup> trace of precipitation. | Estimated reading. The departure for the year at Lanark is -10.30; at Cisne +12.51; and at McLeansboro +10.81. a: Rockford normal; b: Dubuque normal; c: Springfield normal; d: Palestine normal; e: Mt. Carmel normal.

10

Chart Showing the Location of the Observation and Forecast Display Stations.





\*

### Climate and Crop Correspondents.

Stations.	Correspondents.	Stations.	Correspondents.	Stations.	ndents.	Stations.	adent
Addieville	J. F. Hemminghans, John A. Ettinger,	Donnellson	A. C. Morrison.	Larchland	E,	Rockbridge	E. B
Aklu	S. M. Varnier, C. B. Paddock.	Dressor	C. V. B. Wilght.	Le noy	L. 1 ds.	Rock Grove	E. C. 18. H.
Aklu Albany Aledo Allens Spring	H. Bigelow. Wm. I. Cox.	Dundas	J. K. Grismer.	Lincoin	T. l nell. Cha ng.	Rose Bud	WID. K
		Duncan Earlyllle	J. W. McNay. Civde M. Snow.	Linu	A. 1	Rossville	A. bl. 1)
Albota Alsey Aitoua Amhoy Aucona Autloch	D. J. Shear. Geo. E. Young.	Easton	Wm. II, Norton.	Litchfield	C. 1 n	Ruark Rushville	Frank Fa Geo. Dyson
Aucona	Wm. McKlnney. J. C. James, Jr.	Eherle	Peter Jacobs.	Long Brauch	B. A 1. C. W. Myers	Russelivilie	G. W. aloc A. C. Shrie
Arcola	Ren. H. Logau J. M. Guy.	Eden Edgewood Elgin	Samuel Bartley.	Lone Tree	Ahraham Anderson. C. II Jones.	St. Anne St. Francisville St Libory	L. W. Jacki Con. Bagara,
Arlington lieights	E. B. Wheeler.	Elgin Elizabethtown Elkhart	C. It. Hine.	Lynn Center	E. Anderson.	Saiem Samoth	E. C. Mills. Chas. D. McB
Arthur	F. M. Norton.	Elkville	Josiah Schwartz.	McNoel	A. McCrory.	Samsvliie Sandovai	Dr. W. E. Buxton Geo. H. Stlles.
Ashnuore	V. F. Wallace.	El Paso	Itev. S. S. Kemo	Macomb	Alexander McLean.	Sandusky Santa Fe	Benj. Jones. Ransom Thompson
	Julian H. Hali. Edward Johnson.	Elvastou	J. M. Berry. Wm. C. Grant.	Maguolia	A. B. Gurnea. Wm. D. Hayes.	Savoy Scottland	J. II. Duntan
Atterherry Attlla Avery Aviston	S. S. Duncan, E. L. Weiborn,	Emden Enfield	Win. McCormick. John W. Foster,	Manchester	E. L. Maln. Martin Bergan.	Sepo	C. B. Adams. E. B. Warner. Joslah Bagley.
Aviston	Cath. McGough. B. H. Helmann.	Epworth	J. M. Jackson.	Mansfield	W. G. Wack, Jr. O. W. Barnard.	Seymour Shabbona Grove	J. L. Black.
Ayres Baden Baden Barnilil Barnhili Batavia	E. W. Merry. Geo. E. Ucker.	Epworth Equality Essex Eureka	Dr. Lucleu W. Gordon. Danlei J. White.	Mapleton	Wm. Newsam. A. S. Potter.	Shanhon	Amos Yord
Barnhlii	Geo. F. Pyklet. W. L. Meeks.	Fairneid	W. A. Davidsou J. B. Shaener.	Marion Markbam Marylaud	John Goodall, It. B. Marshall.	Sheiterviile	John Coost
Batchtown	v. O. Flamm.		J. C. Babhs. J. M. Current.	Mascoutali	G. F. Wombacher.	Shirland Shobonler Shumway Sibiey Sinclair	Geo. E. B. U. M. L. La M. M. K
Bath	J. D Deverman, H. W. Doerr, J. H. Hammerton.	Fairvlew Faimonth Fancy Prairie	C. S. Brokaw. T. H. Wicoff.	Mason	R. It. Billingsley. Joseph Cavlus.	Sibley	John H. C. S. E. T. Harris.a.
Beason	W A Ruing	Farmer City	P. M. Ingram. J. II. Davidson.	Maud	C. Ameter. Edward Cord.	OULIOUAUK	
Bellalr	Q. A. Wellweeks.	Farmersvliie	Josephus Canhy. W. I. Talbott.	Medla	W. C. Winders. E. W. Starkey.	Spariand Sparta Springfield	G. W. Zimmerma. H. F. Baird.
Bellair Belle Rive Belleville Bellmont Bemeut	B. F. Graff.	Ferreil	Thos. McLaughiin. J. F. Landes.	Metamora	P. J. Wiitz. J. R. Wetherill.	Stewardson	E. Boggs.
Berwick	W. B. Fiemlng, M. D. Matteson.	Fidelity	J. Itodell. Wm. S. Carroll.	Metropolis Middlepoint	Dr. A. C. Ragsdale. W. A. Greer.	Strawn	W. P. Goembel,
Berwick Bethany Beveriy Big kock Biliett	D. E. Pea. W. M. Hnffman.	Finney	H. W. Nicholis. G. W. LeFever.	Milledgeville	Jas. J. Flke. H. K. Davís.	Stronghurst	John Gartman. W. J. McElhiuney.
Big Rock	D. J. Morris. Jas. Carmoody.	Frederick	F. C. Beam. E. Illnderer.	Mlnooka Mitcheli	W. H. Randail. Chas. Lexow.	Subjecte Sniiıvan Summerfield	Chas. II. Ingals J. R. Bean.
Bingham Birds Birds Brldge Bishop Bioomfield	M. M. Hick. J. C. Reyuoids.	Freeburg	Don Costelio. John C. Martindaie.	Mitchic Modena	Benuett James. U. Perkins.	Summit	A. H. Wiley.
Birds Brldge	M. Truby. John Dissmar.	Galena	Chas. Scheerer. C. A. Hinckiey.	Modesto	Hiram Drum. Smith Dorsey.	Summer	P. W. Shick. W. C. Mariew.
		Gallagher	J. M. Gallagher. G. W. Hendrickson.	Mound Mt. Carroll	W. H. Patterson. W. R. Hostetter.	Sugar Grove	J. S. Illlier. W. R. Grimsley.
Blue Mound	W. B. Newbegin. W. D. Mack.	Gardner	J. N. Woods. Jason Green.	Mt. Palatin Mt. Pulaski	T. E. Gailaher. X. F. Beidler.	Tallula	John T. Teal. J. H. Rogge.
		Geneseo	F. E. Richmond. Geo. E. Peck.	Mt. Sterling	Jos. W. CHITY.	Tamalco	W. H. Taylor.
Boulder	G. F. Heaberlin, Chas. G. Compton.	Germantown	B. J. Schlarmann. E. S. Ross.	Mulberry Grove	H. F. Day. J. J. Jackson. Carl Schieike.	Tampico Tayiorvlile Texas Clty Thompsonville	W. M. Daibey. Levi Davis.
Boolds Boulder Bourbon Boyd Brimfield	C. L. Tucker. R. E. Burt.	Gilman	H. F. Mann.	Naples New Berlin	W. B. Rohertson.	Thompsonville	J. S. Bowman. Jas. A. Caldwell.
BIOWHINE ALLEGERATION	Marshail Willard. W. T. Henderson.	Golden Gate	D. C. Ashbaugh. Oscar Myers.	New Grand Chaln	M. D. Massie. D. T. Silmpert. J. E. Sheary.	Toledo	R. Norfolk.
Brownstown Brownsville	D. S. Bnchanan. J. S. Ketcham.	Goodenow	P. M. King. J. H. Bahimann.	New Holiand Neoga	J. D. Wilson.	Toulon Tower Hill Triumph	Henry Nowian. It. H. Bullington. John N. Lee
Bruhaker	E. F. Brubaker. Wm. Love.	Good Hope	W. A. Creel. Evans Finley.	Newmansviile	W. W. Mathews.	Tucker Union	Aiex. Adams. E. L. Josiyn.
Buckley	Wm. H. Cleave. M. H. Knnkel.	Grantshurg	S. J. Elmore. David Price.	Niantic	John Martin.	Union Unity	T. A. Ocock. John A. Milford.
Rumaida	J. Newton Barnes. J. W. Westfaii.	Griggsville	A. C. Stevens. James Bickerdike.	Nokomis Normai Norris City	Walter W. Rogers.	Upper Alton Ursa	W. H. Cartwright. O. W. Thompson.
	S. B. Fish.	Hainesville	Geo. B. Battershall.	Norris City	E. W. Hill. R. G. Ardrey.	Utah Vandalia	H. P. Terpening.
Caledonia	J. S. Quaintance. H. H. Emerson. Wm. 1les.	Hampton	J. H. Williams. Henry Clark.	Oakdale Oakiey Obiong Oid Itipiey. Oliver Omaha Onarga	M. A. Nickey. W. F. McCracken.	Van Orin Vera	Geo. D. Steinhoner. E. B. Wood. D. S. Thoman.
Carbondale	Marcus H. Ogden.	Hawiey Hazel Dell Henry	David T. Hiii. Eli C. Flsk.	Old Ripley	H. E. Spurgeon.	Vergennes	R. W. Morgan.
Carrow	J. J. Carrow.	Hazel Dell	J. N. Kelly.	Omaha Onarga Orchardviile	F. W. Davis.	Verona Versallies Vevay Park	N. Ragsn.
Chaitin Bridge	Nicholas Kahn		J. A. Rittgen.	Orchardviile Otto Ozark Padna	W. H. Eiliott.	Vevay Park	A. L. Ruffner. J. M. Price.
Chapman	C. Wright, W. C. Vandercook. John C. Peebies.	Herbert Hidalgo Hlghland	S. Davis, A. J. Lowe.	Ozark Padna	J. F. Casper. T. O. Pratt.	Vienna Vilia Ridge Villa Ridge	W. R. Crain. D. W. Prindle.
Chesterfield Chesterville Chillicothe	John A. Honse, W. H. Barbonr.	HIII	A. J. Utlger. Jesse F. Willis.			Voorhies	Hngh Rnddock. H. P. Lowe.
Chrisman	Geo. A. Mitcheil. J. B. Kincald.		E. J. File.	Pana Parkersburg Park Itidge Patterson Paxton	R. M. Patterson. Emma C. Whitlock.	Waldron Walnnt Grove Waltonville	Dr. F. C. Semelroth
Chrisman Clisco Clark Center Clay City Clifton Coal City Cobden Coichester Coles Colmsa Comer Concord	John M. Coons. A. Doherty.	Hilisboro Hillsdale Holcomb Hoodville	J. M. Martin. D. H. Lamont.	Patterson	E L. Atchison. W. B. Fiora. John Chapman.	Wanella	A. D. Metz. W. R. Carle. L. H. Storm.
Clifton	Edwin Hohson. E. H. Robinson.	Hoodville	G. T. Rhodes. Wm. Finley.			Wapelia Ware Warner	L. H. Storm. W. W. Warner.
Cobden	R. L. Rich. Frank Gordon.	Hoopeston Horace Hull Humboldt	D. F. Strole. J. D. Miller.	Peotone Perdne Perry Philo Pittsfield Plainview	O. G. Hopkins. John E. Morton.	Warren	G. W. Pepoc Thomas McKee.
Coles	Dr. J. W. Weis. U. S. Swlgert.		W. A. Poorman. Monroe Pugh.	Philo	S. D. Maddock. Hardin J. Westlake.	Washburn Washington	D. S. Sheppard. W. H. Harvey.
Concord	Samuel Comer. John S. True.	Hatton Ingleton Ingraham Ipava Irene	John A. Smith. Theo. Schramer.	Plainview	C. A. Shanner. H. Stabile.	Watseka Watson Wankegan	W. C. Bradley. F. M. Haskeli.
Coolhank	F. Sykes. William McKle.	Ingraham	Geo. W. Gerking, R. W. David.	Pleasant Hill	I. D. Webster. N. W. Parrish. A. H. Thomas.	Wayne	A. D. Aibro.
Crainville	A. M. Norton. O. W. Wilhams.	lrene	H. C. Sweet. James M. Kelly.	Pleasant Vlew Pomeroy Poplar Grove		Wayne Welington Westfield West Salem	J. D. Rothgeb John H. Laws. Fred Beehn, Sr.
Crossvilie	D. W. Johnston.	Inka	G. B. Sanders. Byrde Irwin.	Potomac	J. It. Scott. J. H. Hubbs.		Henry Mowery.
Cnetls	John Kroeger. E. H. Mnrphy. Wm. C. Smart.	Irving Irving Irvington Inka Jsnesville Jewett	Jos. King. J. D. Morgan.	Poplar Grove Potomac Prentice Proctor Protor Putuam Raleigh Ramsey itankin Rardin Ranm Remant Remant Remond Richmond Ridott Itileyville Roanoke Roberts	W. E. Proctor. J. O. Winship.	Wheeler White Oak Springs White Willow Willow Hili	J. W. Hesler. Thomas Wailer. W. H. Shnfelt.
Custer	A. Robinson.	Kampsville	Wm. Nold. Thos. Rose.	Raleigh	E. S. Glascock. Dr. L. F. Stoddard.	Willow Hili	W. A. Lanter.
Danigren	Wm. E. Braden, John McPherson.	Kane	H. A. W. Shirley. Leon flay.	itankin	A. J. Sibrel. Samuel Rardin.	Windsor	1. F. Conltas. Alexander Ross.
Danvers	Amos G. Wright. J. B. Ayres.	Kankakee Kedron Keltner	A. C. Barnett. John Offenheiser.	Ranm	John G. Anderson. S. Saie.	Winnebago Witt Woodblne	Roht. Spottswood. C. E. Maddy. W. F. Hermann.
Darwin	Abnor T Ford	Kernan	M. Fnnk.	Reynolds	Wm. H. Wheaton, J. T. Bower.	Woodblne	W. F. Hermann. M. B. Lester.
De Kalb Delsno	M. J. Henanghan.	Ladd	F. 1. Nirider. C. D. Cochran.	Richmond	Thomas Hunt.	Woodson	W. N. Gamble. John A. Ungianb.
Delsno Delhl Denver	E. W. Clark.	Lafayette	W. B. Todd. A. H. Kemman. J. S. Roberts.	Roanoke	A. M. Todd. W. P. Moore. Amos Arnold.	Wooddale Woodhnii Woodson Worden Yankeytown	John A. Ungianb. John P. Worden. Pani H. Davison.
De Sota	Green R Davig	La Mollie Lanesville	Wm. Marriott.	Roberts	Fred T. Glenn.	Yorkvilie	D. F. Palmer.
Dexter Diamond Lake	A. W. Bsker. Geo. A. Ost.	Ls Prairle Center	E. M. Pierce. R. B. Wheeler.				

V. 3

U. S. DEPARTMENT OF AGRICULTURE.

REPORT FOR JANUARY, 1898

### ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

## WEATHER BUREAU.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE.

UNDER DIRECTION OF

WILLIS L. MOORE

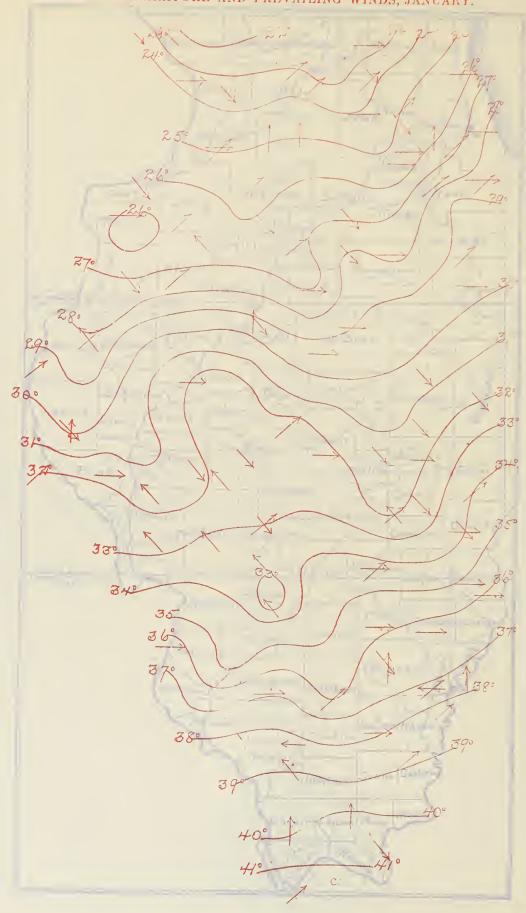
CHIEF OF WEATHER BUREAU

ву

CHARLES E. LINNEY,
SECTION DIRECTOR, CHICAGO, ILL.



Natural History Lierer



U. S. DEPARTMENT OF AGRICULTURE,

## CLIMATE AND CROP SERVICE

OF THE

### WEATHER BUREAU.

Central Office, { WASHINGTON, D. C.) (WILLIS E. MOORE, Chief.

### ILLINOIS SECTION,

CHARLES E. LINNEY, Section Director,

CHICAGO, ILL.

VOL. III.

CHICAGO, ILL.

NO. 1.

Fog prevailed on the 9th, 10th, 11th and 12th, and in the northern district on the 14th, 16th and 17th.

Chemung reports an aurora on the 4th; Knoxville on the 8th, 18th and 26th; Kishwaukee on the 30th, and Rockford on the 22d and 25th.

Lunar halos were commonly observed on the 2d, 3d, 4th, 5th, 7th, 8th, and 10th; solar halos on the 2d, 3d, 4th, 5th, 7th, 8th, 17th, 18th and 26th.

Sleet occurred on the 9th, 12th, 14th, 15th, 19th, 20th, 22d, 25th and 30th, the temperature being near the freezing point at many of the stations on each date.

It is a very unusual thing for Illinois to have thunderstorms on eight days during the month of January, but such were the facts in the month just passed.

Considerable damage was done throughout the south half of the state by high winds on the 22d and 25th; gales were also reported on the 19th, 20th and 21st and 31st.

Thunderstorms prevailed over the state on the 9th, 11th, 12th and 25th, also at a few stations on the 10th, 19th, 20th and 22d. Hail came with the storms of the 9th, 11th, 12th, 22d, and 25th; the latter storm in many respects resembled a summer thunderstorm, with hail as large as hickory nuts throughout eastern counties.

The temperature of the month averaged 30.6° which is about 5.5° above normal, and one of the warmest months the state has experienced in several years. No zero weather occurred in the central and southern districts and but few stations in the northern district had zero temperatures. The month began with cool weather, which gave way to rising temperature on the morning of the 3d. A second cool period came on the 16th and 17th; a third on the 23d and 24th, and the fourth and last, began on the 26th and continued until the close of the month. No severe weather

was experienced and little of the effect of these cool periods was felt south of the northern district. The lowest temperature recorded was —8° at Scales Mound on the 29th.

Following the first cool period the temperature retained a high average and gradually increased to the maximum of the month on the 12th. A second period of warm weather followed from the 18th to the 22d; a third on the 25th, with high day temperatures on the 26th and 28th. The highest recorded was 70° at Cairo on the 9th, and at Cisne and Mt. Vernon on the 12th. The range in temperature for the month was 78°, and the average greatest daily range 30°.

The precipitation of the month was heavy, averaging 4.20 inches and exceeding the normal about 1.44 inches; only '90 and '97 had a higher average in the past 21 years. Five rain periods passed over the state during the month giving general and heavy precipitation; the first began on the 9th and continued until the afternoon of the 15th; the second began on the 19th and ended during the afternoon of the 20th; the third began on the morning of the 22d and ended during the early morning of the 23d; the fourth began on the 24th and ended on the night of the 25th, and the fifth and last, a light snow flurry, began on the 30th, ending that night. The 22d was the day of greatest fall for the state as a whole, the precipitation averaging 0.74 of an inch. The greatest amount measured within the state was 7.11 at Grayville, closely followed by 7.03 at Golconda; the least was 1.85 at Lanark; the greatest in any 24 consecutive hours 2.59 at Golconda on the 19th-20th.

Throughout the northern district the precipitation on the 15th, 20th, 22d and 25th came largely as snow and an average of 19.7 inches fell. In the central district little or no snow fell until the 22d and even in that storm the snow line scarcely passed the center of the state, so that for the month the average snowfall only reached 6.7 inches. In the southern district little or no snow fell, the average was only 0.6 of an inch, which reduces the average snowfall for the state to 10.7 inches.

There were 9 days with .01 of an inch or more precipitation, and 11 clear, 7 partly cloudy and 13 cloudy days during the month. The prevailing wind direction was W. with an average hourly velocity of 10.2 miles; highest velocity 66 miles from the N. E. at Chicago on the 22d, and from the S. W. at St. Louis on the 25th.

The pressure of the air for the month averaged 30.05 inches; greatest pressure 30.63 inches at St. Louis and Keokuk on the 1st; least 29.19 at Olney on the 22d. The three rapidly moving storms, from the 19th to the 25th, gave very sudden and marked changes in atmospheric pressure.

Note.—The mean temperature of the northern district, on page 5, should be 26.1°; the mean temperature of Reynolds should be 25.9°, departure plus 6.5°; of Martinsville 34.0°, departure plus 4.9°; of Cisne 36.4°, departure plus 2.2°; the departures in the central district should be raised one line from Winchester to Keokuk inclusive.

#### OBSERVERS NOTES.

FRIEND GROVE.—Wabash River was boomingfrom the 22d to the close of the month.

V. E. Majors.

Iron.—On the morning of the 25th vivid lightning, with a gale throughout the day.

W. F. Hoskins.

NEW BURNSIDE.—Westerly gales on the 22d and 25th which blew down many chimneys and fences. Geo. Harris.

MARTINSVILLE.—On the 19th, 21st and 22d very hard wind from the west blowing down fences.

J. B. Sheapley.

Hillsboro.—Heavy thunderstorm on the 25th from 4.20 a.m. to 5 a.m.; nearly two inches of hail fell.

P. J. Edwards.

RANTOUL.—The month of January was very unfavorable for marketing grain, but at its close the ground was frozen hard.

H. B. Clark.

Wheaton.—The past month was chiefly notable for its mildness and even temperature, and will go on record as the first January for several years with no zero weather.

Wm. H. Johnson.

Scales Mound.—On the 25th we had the worst storm of the season, setting in with northeast wind, which backed up to north, blocking all travel and drifting east and west roads full.

Jos. Vipond.

DANVILLE.—Light thunderstorms on the nights of the 8th and 11th, also quite heavy thunderstorm accompanied by hail on the morning of the 25th; hail stones the size of hickory nuts.

R. W. Sharpe.

Knoxville.—January was a warm month, only one day that it touched zero. The snow storm of the 22d-23rd came with high wind but no cold; thunder and lightning and a snow storm on the 25th at 6 a.m. C. N. Butt.

RILEY.—On the 22d we had a heavy snow storm with a gale of wind; again on the 25th a furious snow storm, roads badly drifted and travel impeded, but excellent sleighing after the 23rd. Mean temperature of January 6.4° above normal; precipitation 1.91 above; only '80 and '97 had more.

John West James.

WINCHESTER.—On the 9th we had a heavy thunderstorm and from that until the 26th we had a mud blockade; on the 26th it froze up, but not hard enough to carry a team until the 29th, since which it has been frozen hard. The farmers report the wheat looking favorable up to this last freeze up and as there has been a slight snow protection during that time they think it is still all right.

Geo. Hurd.

We wish to impress upon our observers the importance of completing their record during the evening of each day. The records of December and January were in many cases very incomplete, and in almost every case the omission was due to the fact that the record was allowed to go until the close of the month, when copies were made and data over-ooked.

Our observer at Olney, Mr. Victor E. Phillips, was very near the track of the storm centers on the 22d and 25th and has furnished this office continuous readings for several hours each day. On the first day his barometer at 7 a. m. showed a pressure of 29.84, and a steady, rapid fall gave a minimum of 29.19 at 6 p. m. Then it started up and reached 29.86 at 8 a. m. the following day; a gale of wind with rain prevailed throughout the day; some trees, smoke stacks and chinmeys were blown down. On the 25th the storm center passed just north of his station and his wind went round from NE. through SE. SW. to W. The barometer fell to 29.26 at noon, then rose rapidly, with a gale of wind from the W. to 29.81 at 9.15 p. m. The station passed through a variety of weather during the day, having thunder and lightning, gusty winds and a gale, with rain and hail.

January proved so warm throughout that little need was had for snow protection, although the north half of the state was well protected during the little cold weather of the last half of the month; the south half had little snow and no protection from freezing. The mild weather probably caused no special damage, except it was by the thawing and freezing, for little harm usually results from steady cold weather. Over the south half of the state the great amount of rain caused streams to be very high and roads generally to be very bad; in the north half roads were rough until the snow came when sleighing prevailed, with 4 to 10 inches of snow still on the ground throughout the northern district at the close of the month. Precipitation generally was much above normal and in the northern counties the snow was unusually heavy; wheat, rye and grasses are probably unharmed, except slightly by freezing and thawing, although their actual condition at the close of the mouth is largely conjecture, and the real effect of the winter can only be determined at its close.

Barometer and Wind Table.

	1.1			
Stations.	hour	Max	imum citv	velo"
Mean.  Mean.  Ilighest.  Date.  Date.  Total move	Average hour ly.	Miles.	Direc- tion.	Date.
Bloomington 30.06 30.54 I 29.3I 22				
Cairo 30.08 30.61 1 29.36 22 7,40	93 10.1			
Chicago, 30.04 30.47 1 29.27 20 13,23		56	sw.	22
Davenport 30.05 30.55 1 20.43 12 5.65		29	ne.	25
Dubuque 30.06   30.54   1 20.50   12   5 15		40	nw.	25
Galva 30.07   30.58   1   20.40   22				3.
Grayville 30.06 30.55 1 29.23 22				
Hannibal 30.08 30.61 1 29.29 25 7,00	4 9.4	39	ne.	22
Keokuk 30.07 30.63 I 29.34 25 5.90	9 7.9	30	SW.	12
Kishwaukee 30.04 30.45 1 29.48 22				
Minonk 30.04 30.47 I 29.30 22				
Olney 29.96 30.36 I 29.19 22 Oswego 30.04 30.41 I 29.28 22	•• •••••			
		66	sw.	25
Reynolds 30.07 30.57 1 29.25 22 7.73	,	34	sw.	25
Rushville				
Averages 30.05 30.52 29.33 7.56	2 10.2			

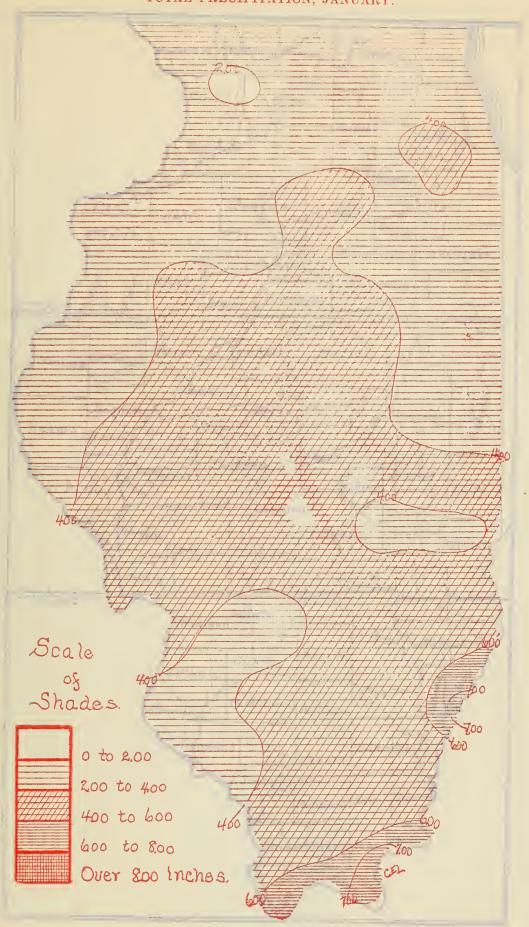
### Climatological data for January. 1898.

					(	Clim	atol	ogic:	al d	ata f	or Ja	inuary	. 199	98.						
			ord	Tem	peratur	e,in d	egre	es Fa	lıren	heit.	Pre	ecipitati	on, in	inches			Sky.		tion	
Stations.	Counties,	Elevation feet.	Length of rec	Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Totai.	Departure from normal	Greatest in 24 hours.	Total snowfall unmelted.	Number rainy days.	Number clear days.	Number partly cloudy days.	Number cloudy days.	Prevailing direction wind.	Obscrver
NORTHERN DISTRICT AShton Aurora Cambridge Chemung CIIICAGO Clear Creek Davenport, Ia Dixon Dubuque, Ia Dwigbt Ft. Sheridan Galva Jollet Kishwaukce Knoxville LaGrange Lanark Martinton Minonk Monmouth Oswego Oitawa Reynolds Riley Rockford Round Grove. St. Charles Scales Mound Streator Sycamore Tiskilwa Walnut Walnut b Wbeaton Winnebago Zion Averages,	Lee*I Kane Ilenry Mellenry COOK Putnam Scott Lee Dubuque Livingston Lake Ilenry Will Winnebago Knox Cook Carroll Iroquois Woodford Warren Kendall*I LaSalle Rock Island Mellenry Winnebago Whiteside Kane *I JO Daviess LaSalle De Kalb Bureau Bureau Bureau Bureau Bureau Scarroll Winnebago Carroll  Bureau Bureau Bureau Bureau Bureau Bureau Carroll	830 676 824 820 824 700 613 725 651 657 693 745 633 745 784 650 900 900 900 626 855 798 717 769 900 900 900 900 900 938	3 19 5 4 27 100 27 8 24 4 7 7 12 5 6 3 8 8 6 6 8 10 4 15 8 111 2 2 6 3 3 3 3 5 7 17 3 3 6 6 3 10 0 4 4 4 4 4 4 4 4 4 4 4 5 10 10 10 10 10 10 10 10 10 10 10 10 10	25.0 27.4 22.4 27.0 24.8 24.2 27.8 24.2 27.8 26.3 24.2 27.8 29.6 29.6 24.2 27.2 24.8 27.0 26.3 27.0 26.3 27.0 26.3 27.0 26.3 27.0 26.3 27.0 26.3 27.0 26.3 27.0 26.3 27.0 27.0 27.0 27.0 27.0 27.0 27.0 27.0	+2.7 +0.2 +7.9 +2.3 +5.2 +0.4 +5.9 +0.0 +2.2 +3.3 +5.1 +3.2 +7.0 +3.0 +7.0 +7.0 +7.0 +7.0 +7.0 +7.0 +7.0 +7	44 49 43 41 55 55 45 42 44 44 62 48 55 48 47 60 48 47 46 47 46 48 47 47 46 48 47 47 46 48 47 47 48 48 49 49 49 49 49 49 49 49 49 49 49 49 49	12 12 15 5 12 12 12 12 12 12 12 12 12 12 12 12 12	- 1 5 0 0 6 0 4 1 1 4 4 4 2 1 1 4 4 4 2 1 1 2 3 3 1 4 4 8 6 1 1 1 3 3 8 3 3 - 1 2	27 24 29 24 22 24 23 22 24 29 24 29 24 24 24 29 24 29 24 29 24 29 20 21 29 20 21 21 21 21 21 21 21 21 21 21 21 21 21	32 29 31 25 38 30 34 27 34 36 33 34 34 36 34 34 32 27 26 33 33 32 31 32 31 32 31 32 31 31 31 31 31 31 31 31 31 31 31 31 31	2.69 5.34 4.00 3.44 4.00 3.58 4.05 2.59 4.05 3.38 4.05 3.38 4.05 3.38 4.05 3.38 4.07 3.38 3.48 4.07 3.38 3.48 3.38 3.58 3.44 3.20 3.38 3.38 3.38 3.38 3.38 3.38 3.38 3.3	+0.22 +2.47 +0.97 +0.36 +1.39 +2.02 +1.89 +0.71 +0.51 +1.20 +1.55 +1.45 +1.51 +0.59 +1.58 +0.59 +1.19 +0.51 +1.19	0.73 1.43 0.96 0.95 1.13 1.30 0.80 1.06 0.80 1.06 1.01 1.21 0.96 1.05 1.05 1.09 1.21 0.96 1.01 0.90 1.18 1.10 0.90 1.10	18. 3 27. 4 27. 4 27. 4 27. 4 27. 4 27. 4 27. 4 27. 4 27. 5 27. 2 27. 5 27. 2	100 100 17 99 11 77 88 99 97 78 8 99 97 77 12 8 99 97 77 100 66 67 99	10 11 7 7 12 8 10 13 13 15 11 11 11 12 17 17 15 11 18 13 11 11 12 17 17 17 17 17 17 17 17 17 17 17 17 17	988 1129 9116266 1536655541 1337554466635116677775339777	12 12 13 17 10 12 15 16 12 10 11 14 13 14 13 14 15 7 7 8 13 16 11 11 10 11 11 11 11 11 11 11 11 11 11	S. W. S. W. S. N. N. S. S. S. W. S. W. S.	Ira R. George, Ira R. George, Dr. M. M. Robbins, S. B. Randall, Jos. Kuhles. Central Office, II. K. Smith, Geo. E. Hunt. @ Eustace Shaw. E. II. Bowie. @ Prof. G. W. Horton. Post Surgeon U. S. A. Prof. F. U. White, F. M. Muhlig, Geo. Stevens, C. N. Butt. Prof. F. E. Sanford M. N. Wertz. Geo. W. Bunker. O. M. Davison. D. J. Strang, J. S. Seely, Dr. J. O. Harris, John West James, Hosmer C. Porter, R. A. Hawley, S. L. Adams, Joseph Vipond, R. Willians, Roswell Dow, W. I. Greeley, O. C. Nussle, Wm. II. Johnson, Frank Osborn, Robert McGrath,
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	White Bond Jackson *5. Volte Randolph Clay Hamiltou St. Clair Johnson Richland Washington Perry.		27	32.6 39.0 36.5 37.8 35.8 37.9 35.1 35.8 40.4 36.1 37.0	+5.6 +5.6 +2.4 +6.8  +4.1 +7.9 +6.4 +6.3 +7.3 +4.4  +5.1 +7.5 +6.9 +5.5	67 70 68 69 64 57 64 68 64 67 64 70 68 65 65 65	12 9 12 9 12 12 12 12 12 12 12 12 12 12 12 12 12	7 12 8 7 7 14 8 12 6 3 11 12 6 3 10 3 9 8 7 5 6 10 8 4	2 2 2 1 4 2 2 2 2 2 2 2 2 1 2 2 2 2 1 2 2 2 1 1 2 2 2 2 1 1 2 2 2 1 1 2 2 1 1 2 2 1 1 1 2 1	24 24 35 29 20 25 28 28 25 25 27 27 27 25 28 29 27 27 27 27 28 28 29	6.00 6.26 5.06 4.20 6.35 7.01 3.97 4.03 4.86 4.93 5.86 4.57 4.79 4.79 4.53 5.02 4.20	+3.27 +2.45 +2.02 +0.61 +2.21 +3.58 +1.12 -4.85 +1.12 -4.93 +2.13 +2.66 +2.02 +2.11 +2.17 +1.93 +1.94	1.50 2.21 1.45 1.40 1.93 1.79 1.20 1.44 1.52 1.60 1.24 1.95 1.35 1.35 1.50 1.28	0.8 0.4 1.0 0.1 1.1 1.0 2.0 + 0.2 0.8 + 0.5 1.0 0.4 + 0.9 0.6 10.7	10 12 9 12 10 10 10 7 9 11 10 9 8 8 8 9 12 10	12 5 19 12 8 19 8 6 12 9 9 6 4 2 15 10 10 10	6 155 2 8 11 2 8 8 S 12 14 15 9 3 7 12 6 13 7 8 7	13 11 10 11 12 10 15 18 11 14 10 11 12 20 13 13 14 15 9 13 13 13	SW. SW. SW. S. S. NW. Se. SW. SE. SW. SW. SW. W. W. SW. SW. SW. SW. SW.	B. F. Michels. P. H. Smyth.  W. H. Mix. John Buck. V. E. Majors. Jas. Hammons, Jr. Johns, Starkey. Prof. M. S. Oudyn. E. E. Thornton. W. F. Hoskins. W. J. S. Catheart. Belford A. Jenkins. John Judd. Dr. G. Leibrock. J. F. Bogan. George Harris. Victor E. Phillips. J. A. Chesney. J. C. Sylvester. Dr. H. C. Frankenfield

Note,—Unless otherwise indicated the highest, lowest and mean temperature are from maximum and minimum thermometers. \*Highest and lowest temperature from observed readings. 1. Mean temperature from 7+2+9+9+4:2. 8a+8p+2:3. 7a+7p-2:4. 6a+6p+2:5. 7a+2p+2:2. a. b. c. d. etc. number days missing. @. U. S. Weather Bureau Stations, †Same temperature occurred on more than one day † Trace in precipitation column when amount is less than 0.01 of an inch. All records are used in determining State or district means, but State and district departures are determined by comparison of current data of only such stations as have normals.

1898.	
r January,	
£0	
Maximum and minimum temperatures for January, 1898	
minimum	
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### Daily precipitation for January, 1898.

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olconda         †         39         †         43         .02         16         .37         †         .75         .35         1.79         .80         1.74         †         19         .04         .70         .37         .38         1.79         .95         1.79         .95         1.79         .95         1.79         .95         1.79         .95         1.79         .95         1.79         .95         1.79         .95         1.79         .95         1.79         .95         .17         .95         .17         .70         .17         .70         .14         .06         .40         .22         .39         .95         .17         .70         .14         .40         .40         .22         .20         .37         .64         .30         .34         .30         .62         .27         .02         .38         .40         .20         .20         .38         .40         .20         .20         .38         .40         .20         .30         .59         .98         .10         .22         .06         .40         .20         .20         .20         .38         .42         .40         .30         .34         .30         .62         .27         .02	Friend Grove	+					1 7		I T	21					.06	. II				88	1.05		1.05	+06		. 68					.14	6	6.35
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Iney     †     .22     1.20     †     .26     .55     †     .103     .33     .78     .75     .10     †     .52       lum Hill     .23     1.08     .03     .38     .42     .12     .54     .16     .12     .30     .04     .479       t. John     .93     .02     .17     .65     .15     .50     .50     .30     .4     .407       t. Louis, Mo.     †     .13     .71     †     .54     .29     .03     †     .31     .97     .76     .02     .70     .00     .07     .453       Averages     †     .00     .00     †     .94     .01     .06     .27     †     .62     .06     †     .00     .00     .00     .00     .00     .07     †     .50       State averages	New Burnside	†				†	.37			·II.		-43			.88	+			• • • •	:.95			.83	-04		.06		• • • •	• • • •	• • •	+		4.67
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### U. S. DEPARTMENT OF AGRICULTURE.

REPORT FOR FEBRUARY, 1898

### ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

## WEATHER BUREAU.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE.

UNDER DIRECTION OF

### WILLIS L. MOORE

CHIEF OF WEATHER BUREAU

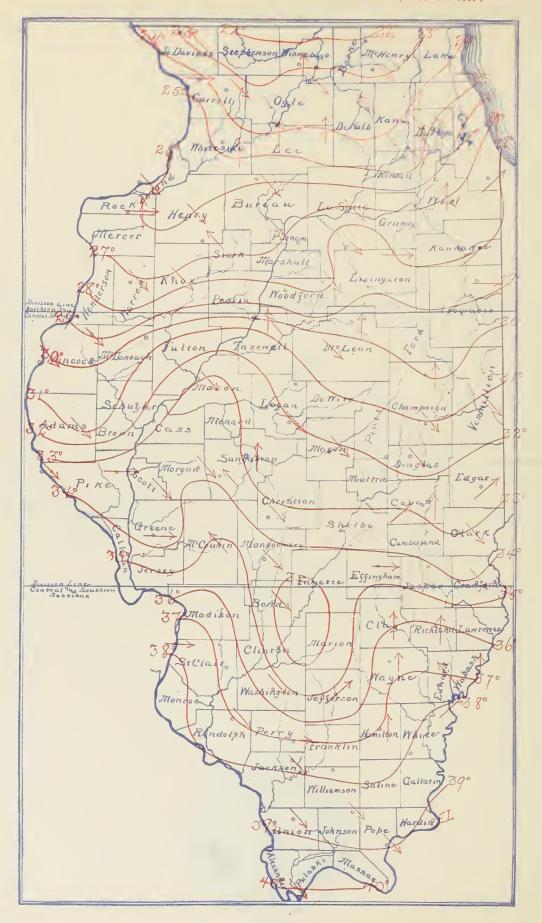
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CHARLES E. LINNEY,

SECTION DIRECTOR, CHICAGO, ILL.



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U. S. DEPARTMENT OF AGRICULTURE,

OF THE

### WEATHER BUREAU.

Central Office, Washington, D. C. WILLIS L. MOORE, Chief.

ILLINOIS SECTION, CHARLES E. LINNEY, Section Director,

CHICAGO, ILL.

VOL. III.

CHICAGO, ILL.

NO. 2.

Sleet was general over the state on the 4th and quite common in the central and northern districts on the 17th, 18th, and 19th.

Fog on the evening of the 8th and during the 9th and 10th prevailed over the entire state, also in localities on the 18th and 19th.

Faint auroras were observed at Kishwaukee on the 13th, at St. Charles on the 14th, 16th and 17th, and at Round Grove on the 20th.

Only two small thunderstorms occurred during the month, the first at Hannibal on the 9th, the second at Friend Grove on the 19th.

The station at Iron, White Co. has been transferred to Equality, Gallatin Co., and Dr. Lucien W. Gordon, our crop reporter at that place, becomes the Observer.

After many years of most excellent work as an Observer at Jordans Grove, Randolph Co., the venerable Mr. W. J. S. Cathcart has retired, and is succeeded by Mr. Jas. A Caldwell, our crop reporter at Tilden. Mr. Cathcart; has long since past the allotted "three score and ten years," yet he gives up the work reluctantly, and it is likewise with much reluctance that we part with his valuable services.

It is with much regret that we report the death during the month of two of our best Observers. Mr. Belford A. Jenkins, our Observer at Louisville, died on the 24th of February, and the following evening Mr. Frank Campbell, our Observer at LaHarpe, followed. Mr. Jenkin's death was due to an attack of grippe and pneumonia. although he had not been well for some time previous. Mr Campbell's death came very suddenly and was a great shock to his family and and friends; both were highly respected citizens and their loss is sadly felt by a large circle of friends and relatives. As Observers both have been among our most faithful. last, and in their death the service looses two of its most Robinson on the 14th. valuable workers and friends.

The temperature of the month of February averaged 30.5°, which is about 1.8° above normal, the excess being greatest throughout the central district.

Sharp, cold weather prevailing at the beginning of the month and the first three days were much the most severe of the month and of the winter. A second cool period followed on the 15th-16th, and a third from the evening of the 23d to the morning of the 27th. The lowest temperature recorded was -16° at Scales Mound on the morning of the 1st. Fifteen below zero was recorded at Zion on the 1st and at Cheming on the 3rd.

Following the first cold period the temperature rose slowly to the maximum of the month on the 10th; the 8th, 9th and 10th all being days of comparatively high temperature; the 13th and 17th were also warm days. The highest observed was 71° on the 10th at Cisne and Golconda, also across the Mississippi at St. Louis. This gives an extreme range of 87°, while the average of the greatest daily range was 32°.

The precipitation of the month averaged 2.02 inches, which is about 0.19 of an inch below the normal fall. The stations throughout the northern district generally had slightly more than normal fall, and this was most marked in the northeast counties, the excess reaching 1.60 inches at Sycamore. In the central district light precipitation in the east half and in the northwest part brought down the average slightly below normal; in the southern district still further decrease in precipitation resulted in a deficiency for the district of 1.29 inches; the deficiency at Cairo reaching nearly three inches. Six short rain periods passed over the state during the month; they were on the 1st-2d, 4th-5th, 8th to 11th, 14th-15th, 17th to 21st and 27th-28th, the 19th proving the day with greatest average fall. The greatest amount recorded was 4.23 inches at Greenville; the least 1.07 inches at New Burnside; the greatest in any 24 hours was 1.80 inches at Mascoutah on the 10th-11th.

The snowfall for the month was quite heavy, particularly throughout the northern district where the average touched twelve inches, while the average for the state as a whole reached 6.6 inches. Some protection was afforded by the snow in northern counties throughout the month, as a little of the snow on the ground at the beginning remained until the heavy falls from the 19th to 21st, which again remained on the ground until the close of the month. In the central counties the ground was bare most of the month, the snow melting very rapidly; while in the southern little fell, and this melted almost as fast as it fell.

There were 9 days with .01 of an inch or more precipitation, also 8 clear, 8 partly cloudy and 12 cloudy days during the month. The prevailing wind direction was from the NW., with an average hourly velocity of 10.6 miles; highest velocity 48 miles from the NE. at Chicago on the 15th.

The barometric pressure averaged 30.11 inches; highest efficient and reliable; both continued their work up to the 30.68 at Grayville on the 1st, lowest 29.60 at Davenport and

#### OBSERVERS NOTES.

ALEXANDER.—Robins seen on the 18th. Geo. Hall. Sycamore.—Wild geese seen on the 9th. Roswell Dow.

MINONK.—Roads very bad all month. Ducks began flying on the 8th.

O. M. Davison.

Winnebago.—Ground well protected by snow during the freezing weather.

Frank Osborn.

CAMBRIDGE.—An average of about four inches of frost remained in the ground during the month.

S. B. Randall.

HAVANA.—Illinois River 7.3 ft. above low water at the beginning of the month and 11.3 ft. at its close.

J. M. Ruggles.

Knoxville.—February was a disagreeable month. All kinds of rough feed becoming scarce and advancing in price.

C. N. Butt.

Peoria.—On the 9th the humidity remained at 100 percent. throughout the day, something I have never witnessed before.

Fred. Brendel.

WINCHESTER.—Roads were very bad throughout the month. The winter wheat has apparently received but little damage during the month and at its close looks favorable.

Geo. Hurd.

RILEY.—The mean temperature of the winter was 22.4° which is 1.4° above normal; total precipitation 8.42 inches, which is 2.81 above the average of the past 34 winters.

John West James.

Palestine.—Owing to dry weather last fall most of the wheat was sown late, with the ground cloddy. Early sown wheat is fair, but the late sown is a very poor prospect; some will be plowed up.

Jno. E. Templeton.

FRIEND GROVE.—This winter has been one of the mildest we have ever witnessed, no zero werther, but very rainy and bad roads. No robins have yet been seen but ducks and geese have been flying all month. Stock healthy and doing well; some growing wheat looks well and some bad, the prairie is getting worse every day and seems badly hurt by freezing; timber wheat injured to some extent.

V. E. Majors.

Our Observers at Friend Grove and Olney report an unusual phenomenon on the 27th. They witnessed a very large solar halo with the sun entirely outside the circle to the south of it, and immediately surrounding the sun a coronea. The large outer circle was reported white in color and the other red to violet purple; parhelia (sun dogs) appeared at the top and bottom and sides of the halo.

### Winter Grain at the Close of February.

Throughout the northern district the amount of wheat sown was very small. The exceedingly dry fall caused the plant to come up slowly, but the winter has been favorable and at the close of February the plant seemed to be in good

condition. A little more rye was sown, but not so much as usual, and its condition seems to be fair to good. So far as can be ascertained meadows are all right.

In the central district the acreage was much less than anticipated owing to the drouth, and sown grain was dormant for a considerable period, hence the plant began the winter very small. In the east, north and some central counties the condition is reported poor, but in the remaining part of the central counties, in the south tier and in western counties the condition is generally good, the plant healthy and outlook favorable; the winter has generally been favorable. Little or no rye was sown; clover seems to have received some damage; orchards appear to be in good condition.

In the southern district conflicting reports rather seem to indicate prevailing poor condition; particularly on prairie and thin soils, but more favorable on timber and good land. Acreage is generally small and plant had little growth before winter set in, which has, however, been favorable; the more recent freezing and thawing has caused more damage than the previous severe steady winter weather. The fruit prospect seems to be good at present.

Reports received up to the 15th of March indicate that an early spring is general. In the southern district oats have been quite generally sown; plowing for corn is in progress; early gardens and potatoes have been planted; pastures are green; wheat much improved by the warm rains, and peaches beginning to bloom. In central counties the activity is nearly as great, although not so far advanced. Oats are just beginning to be sown, and plowing and gardening begun. In west counties particularly wheat is much improved and, along with rye and grasses, is green and vigorous. Throughout northern counties no spring work is yet begun, other than general cleaning up and preparation for future work. All spring birds are at hand, bees are flying and the earliest trees budding.

Baromete and Wind Table.

		Baro	omet	er.				Wind		
Stations.						ve.	our.	Maxi	mum eitv.	
Stations.	Mean.	Highest.	Date.	Lowest.	Date.	Total move- ment.	Average hour-	Miles.	Direc- tion.	Date.
Bloomington	30.13	30+54	I	29.75	14					
('airo	30.16	30.58	3	29.78	14	6,666	9.9	36	DW.	15
Chicago,	30.10	30.52	I	29.72	14	13,029	13.7	48	ne.	15
Davenport	30.09	30.63	1	29.60	14	5,805	8.6	27	nw.	23
Dubuque	30.10	30.63	I	29.64	14	5,703	8.5	35	nw.	2
Galva	30.14	30.68	I	29.67	14					
Grayville	30.15	30.55	I	29.79	14					
Hannibal	30.14	30.66	1	29.70	17	7,504	11.2	36	S.	4
Keokuk	30.13	30.66	I	29.66	14	6,220	9.2	35	SW.	4
Kishwaukee	30.07	30.50	I	29.69	14					
Minonk	30.08	30.54	I	29.65	14					
Olney	30.02	30.36	I	29.70	14					
Oswego Robinson	30.10	30.46	5	29.68	14					
St. Louis	30.05	30.40	I	29.74	14	7,906	11.8			
Springfield	30.15	30.59	I	29.74	14	8,004		42	SW.	14
Reynolds	30.12	30.39		29.72	14	0,004	11.9	34	s.	4
Rushville										
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Averages	30, 11	30.56		29.69		7,605	10.6			
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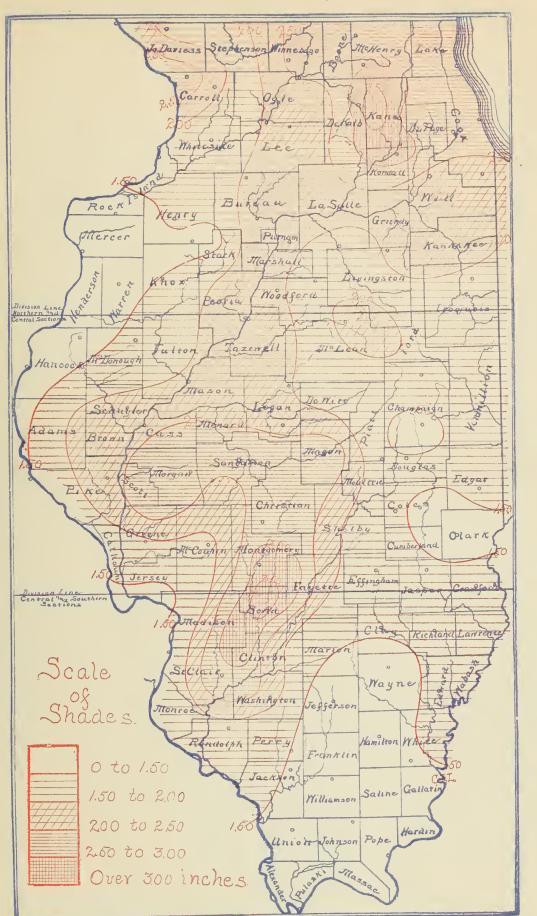
### Climatological data for February, 1898.

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Stations.	Counties.	Elevation feet.	Length of record years.	Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date. Greatest daily range.	Total.	Departure from normal	Greatest in 24 hours.	Total snowfall unmelted.	Number rainy days.	Number clear days.	Number partly cloudy days.	Number cloudy days.	Prevailing direction wind.	Observer
NORTHERN DISTRICT.														1					
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Averages CENTRAL DISTRICT.				25.7	+1.4	54	• • • •	9	32	2.24	+0.44	0.86	12.0	10	7	8	13	nw.	
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Note,—Unless otherwise indicated the highest lowest and mean temperatures are from maximum and minimum thermometers. \*Highest and lowest temperature from observed readings. 1. Mean temperature from 7+2+9+9±4: 2.8 a+8p±2: 3.7 a+7p±2: 4.6 a+6p±2: 5.7 a+2p±2: a.b.c.d. etc. number days missing. @U.S. Weather Bureau Stations. + Same temperature occurred on more than one day. + Trace in precipitation column when amount is less than 0.01 of an inch. All records are used in determining State or district means, but State and district departures are determined by comparison of current data of only such stations as have normals. \$Partially estimated.

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Daily precipitation for February, 1898.

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### U. S. DEPARTMENT OF AGRICULTURE.

REPORT FOR MARCH, 1898

## ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

## WEATHER BUREAU.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE.

UNDER DIRECTION OF

### WILLIS L. MOORE

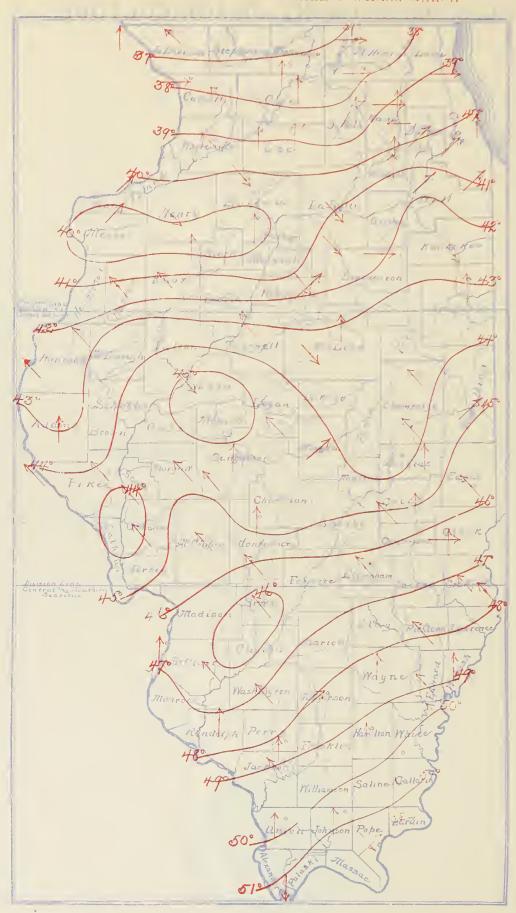
CHIEF OF WEATHER BUREAU

BY

CHARLES E. LINNEY,

SECTION DIRECTOR, CHICAGO, ILL.





U. S. DEPARTMENT OF AGRICULTURE,

## CLIMATE AND CROP SERVICE

OF THE

### WEATHER BUREAU.

Central Office, \(\) WASHINGTON, D. C.)

WILLIS L. MOORE,
Chief.

ILLINOIS SECTION, CHARLES E. LINNEY, Section Director, CHICAGO, ILL.

VOL. III.

CHICAGO, ILL.

NO. 3

Frosts should be carefully noted from this time forward.

Brilliant auroras were observed over the entire state on the evenings of the 14th and 15th.

Sleet was common over the state on the 23d, also in the northern district on the 11th and 12th.

The station at Clear Creek, Putnam Co., has been transferred to Henry, Marshall Co-; Dr. Frederick A. Powell is the new Observer.

Lunar halos were generally observed on the 3d to 8th, and 28th, 29th and 31st; solar halos on the 3d, 5th, 6th, 8th, 16th, 17th, 23d, 25th and 31st.

Fog prevailed in the northern district on the 18th, 19th and 21st; in the central district on the 10th and 21st and in the southern district at isolated river stations on the 11th to 15th and the 18th.

Beginning with the 15th thunderstorms occurred in some portion of the state on each day except the 24th, and 29th to the 31st; the storms of the 15th, 16th, 18th, 19th, 22d and 27th being of very wide extent. Hail was reported with the storms of the 15th, 16th, 17th, 18th, 23d and 27th.

March was a month of large excess in temperature and rainfall; the former exceeding the normal 4.8°, and the latter exceeding the normal 3.82 inches; the average temperature was 43.4°, the average rainfall 7.29 inches.

The month began with cool weather which continued until the 5th, the lowest temperature of the month occurring on the morning of the 3d. Cool weather again prevailed from the 11th to the 14th, the 23d-24th, and from the 28th to the close of the month; the nights of the 6th, 7th and 25th were also cool. Frosts prevailed throughout the month and temperatures below freezing were generally recorded on the morning of the last day of the month. The lowest recorded was zero, observed at Lanark on the morning of the 3d.

Warm periods were experienced from the 8th to 10th, 15th to 17th, 19th to 22d and 26th-27th. Several dates are given at the individual stations as that on which the highest temperature occurred, but the 27th was the day of highest average temperature, reaching 56°. The highest recorded was 79° at Golconda on the 22d and at Equality on the 26th. This gives an extreme range in temperature of 79°, while the average of the greatest daily range was 34°.

The precipitation of the month came in five rain periods; the first was on hand at the beginning of the month, ending in snow flurries on the 2d; the second began on the evening of the 8th in the southern district and became general over the state on the 9th, continuing heavy and general until the 13th; the third came on the 15th and joined with the fourth period in the southern district on the 17th, the latter continuing general and heavy until the 23d; the fifth and last began on the 26th and gave a heavy fall of rain that night and all day the 27th, ending during the night. Light snow flurries also prevailed over the south half of the state on the 30th. The result for the month reached the large amount of 7.29 inches, which is 1.33 inches greater than the average for March of last year.

The greatest fall measured within the state was 14.16 inches at Cobden, closely followed by 14.01 at Robinson, 13.05 at Plum Hill and 12.77 at Effingham. The southern district reached the high average of 10.60 inches, somewhat in excess of March of last year. The least amount measured was 2.66 inches at Lanark, and the extreme northwest counties generally fell below three inches. The greatest amount measured in any 24 hours was 5.42 inches at Mt. Pulaski. Excessive rainfall (over 2.50 inches in 24 hours) was measured at Coatsburg, Decatur, Effingham, Hannibal, Mt. Pulaski, Philo, Robinson, Springfield, Cairo, Cobden, Equality and Plum Hill.

Snowfall in the northern district reached an average of 4.3 inches, in the central district 2.2 and in the southern 0.6, giving an average of 2.7 inches for the state. This gives slightly more than 25 inches of snowfall since the first of last November.

There were 13 days with .01 of inch or more precipitation, and 12 clear days, 7 partly cloudy and 12 cloudy days during the month. The prevailing wind direction was SE. with an average hourly velocity of 10.3 miles; highest velocity 62 miles from the W. at Chicago on the 28th.

The barometric pressure for the month averaged 30.09 inches; highest 30.56 inches at Keokuk on the 29th, lowest 29.59 inches at Olney on the 12th.

Note.—The following changes should be made on page 5: Aurora mean temperature 40.6°, departure plus 6.8°; Ft. Sheridan 38.9°, 7,1°; Minonk, 41.5°, 5.1°, range 36°; Scales Mound 36.4°, 6.0°; Zion 38.2°, 4.5°; Carrollton 44.1,° 3.8°; Morrisonville 44.2°, 4.5°; Palestine 47.4°, 6.5°; Greenville 44.8°, 3.1.°

#### OBSERVERS NOTES.

COBDEN.—Peaches in bloom the 22nd. John Buck, Oswego.—Ice went out of Fox River on the 7th.

J. S. Seely.

Martinsville.—A very wet month; roads in very bad condition.

J. B. Sheapley.

Ottawa.—The rivers here were over their banks on the 20th and again on the 27th.

J. O. Harris,

RANTOUL.—Robins appeared here on the 6th; brilliant aurora from 8 to 9 p. in. on the 14th. H. B. Clark.

Winnebago.—Great display of aurora on the 15th, streamers reaching boyond the zenith at 7.30 p.m.

Frank Osborn.

Albion.—On the night of the 5th of March was seen one of the brighest lunar halos noticed in many months.

B. F. Michels.

Aurora.—Meadow larks appeared here on the 4th; reversed rainbow was seen in the sky at 3 p. m. on the 5th.

Chas. A. Love.

CAMBRIDGE.—Farmers began sowing oats on the 25th but heavy rains and low temperature stopped the work until the 29th.

S.B. Randall.

FRIEND GROVE.—River going down very slowly, the wheat in the bottoms will all be killed; fruit prospects never better.

V. E. Majors.

ELGIN.—Robins first seen on the 8th; range of 40° in temperature on the 28th; season fully two weeks in advance of the average.

J. S. Dumser.

HAVANA.—Illinois River 11.3 above low water mark on the 1st; 12 ft. on the 15th; 17.8 on the 31st and still rising; the highest for many years.

J. M. Ruggles.

OLNEY.—On the 15th lightning struck and burned three stores at Dundas, the property of a Mr. Hitch. In this city a house was also struck.

Victor E. Phillips.

Robinson.—Wabash and Embarass Rivers are reported as high as at any time in fifteen years. On the 21st we had one inch of rain in 15 minutes.

A. P. Woodworth.

Scales Mound.—Kill deer and snipes appeared on the 6th, bluebirds on the 7th, robins on the 8th, larks on the 9th, and blackbirds and ducks on the 10th; sod plowing began on the 17th.

Joseph Vipond.

KNOXVILLE.—A warm month; blue birds and robins appeared on the 7th; frogs on the 19th; pastures and meadows are green, roads improving; little farming yet, ground to wet and heavy.

C.N. Butt.

Ashton.—The aurora on the 14th was of unusual brightness, overshadowed by heavy red; robins and ducks were seen on the 9th; corn stalk plowing began on the 30th, oats seeding on the 31st.

Ira R. George.

Charleston.—Larks appeared on the 2nd, robins on the 6th; wild daisies began to appear on the 12th; goose berry

leaves on the 15th; early apple leaves on the 20th. The Embarrass River was 20 ft. above low water mark on the 24th, the highest since 2d of August, 1875; a great deal of damage has been done by the floods in the river bottoms.

Jacob B. Dazev.

### Crop Conditions at the Close of March.

March was a month of excessive precipitation, reaching nearly fifteen inches in extreme southern counties and about six in northern, with large excess in temperature and no severe weather.

Considerable progress was made in farm work in the south half of the state during the first ten days, but since then delay or suspension has resulted from heavy rains. Probably one-third of the oats were sown in the southern district at the close of the month. Some plowing and a few fields of oats and spring wheat were sown as far as northern counties but preparatory work was most common. Early gardens were begun in the southern districts and a start was made in the central and northern at the close of the month.

Fruits were blooming in the southern district as early as the 20th and buds were ready to burst along the south tier of central counties at its close. The freezing weather seemed to do little damage, although some may result to peaches, pears and cherries.

Grasses everywhere made rapid progress and were in fine condition at the close of the month. Some damage, however, was reported to old clover from winter killing and slight damage to young clover by the sharp frosts at the close of the month

Wheat generally was much improved and was of fine color, good root growth and in good condition. Small acreage is general, and even this is shortened in the southern district by floods. Rye is in good condition. The month as a whole was favorable, although warm, dry weather was needed at its close.

Barometer and Wind Table.

		Bar	ome	ter.				Wind	1.	
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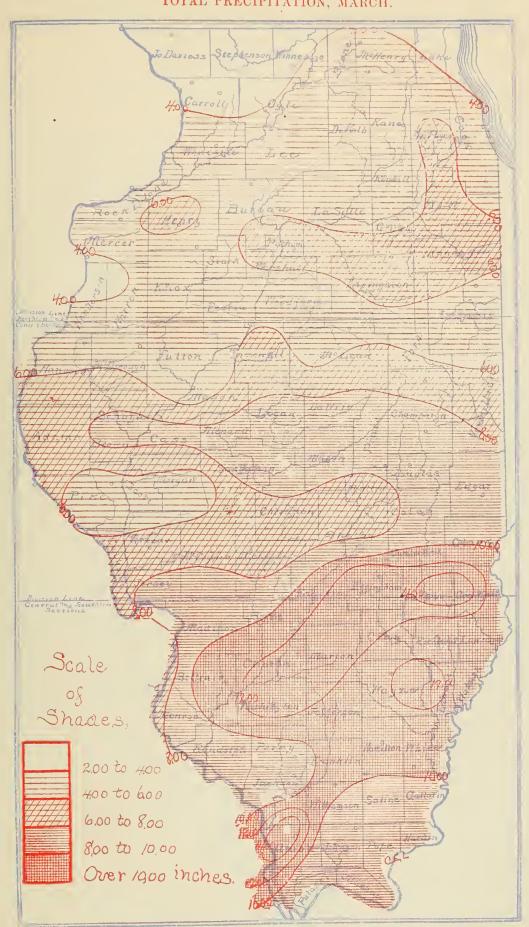
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Note,—Unless otherwise indicated the highest lowest and mean temperatures are from maximum and minimum thermometers. \*Highest and lowest temperature from observed readings. 1. Mean temperature from 7+2+9+9+4: 2. 8a+8p-2: 3. 7a+7p+2: 4. 6a+6p+2: 5. 7a+2p+2. a. b. c. d. etc. number day missing. @U. S. Weather Bureau Stations. + Same temperature occurred on more than one day. + Trace in precipitation column when amount is less than 0.01 of an inch. All records are used in determining State or district means, but State and district departures are determined by comparison of current data of only such stations as have normals. PPartially estimated.

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TOTAL PRECIPITATION, MARCH.



### Daily precipitation for March, 1898.

	DAY OF MONTH.  1.   2.   3.   4.   5.   6.   7.   8.   9.   10.   11.   12.   13.   14.   15.   16.   17.   18.   19.   20.   21.   22.   23.   24.   25.   26.   27.   28.   29.   30.   31.														al.																	
Stations.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	81.	Tot
NORTHERN DISTRICT.							}																	4								
Ashton	. 50								.02	. 23	.75	. 20	.05		.18			1.02	.61	.01	.23	.06	+			.12	.80	+				4.78
AuroraCambridge	.42	.03							1 +	1.14	+ 1	. 35			. 20			2.00		.03	. 02	. 40.				.70	1.44					6.15
ChemungCHICAGO	.01								.10	+ 1	1.20	. 29			. 23		• • • •	.23	. 34	.08	. 30	.05	+			.41	1.21	.15				4.25
Davenport, Ia	.21	+05								.01	.93	.10	. 27		. 28			.72	.40	+	.03	.30	+			+	1.39	. 21				4.85
Dixon	·47	+							.02	. 16	• 79	. 19	· OO		.23			1.31	• 30	T		.30				+	.95	. 68				2.75
Dwight	**************************************																															
Ft. Sheridan	ridan																	5.08 3.13														
GalvaGienwood	-32	1	1						+	+	.90	, OQ	. 13		. IO			.00	1.15	T	7	• 54	+			.05	1.49	24				
Hospital	.30	.20								.07	• 55	.17	•33		. 20			. 10	2.10		Υ [	-45				2.02	1.20					7.69
Joliet	.05			• • • •	• • • •	• • • •			+	.09	•95	.40	.05		.07	• • • •		1.27	• 5.5	.03	.07	. 25	.02			1,25	1.93	07				6.12
LaGrange	.17	†							.10	.08	•93	. 22	.05		- 37			. 24	1.82		+	-14				. 22	1.53					5.90 5.87 2.66
Lanark Martinton	.52										4.0				. 6			+			67	0.5	+		- 1	OF	1 25	4				4 20
Minonk Monmouth	. 16	+							†	+	.85	. 27	.05		.02			.10	1.20	†	.15	.32				.10	1.75	+				5.00
Oswego	. 05									+	.50	- 37			07			01.1	.43	†	+	.18				.03	1.43					4.11
Ottawa Reynolds																			5 52													
Riley	.04	+							4	0.0	0.4	0.0	28		T A			.72	0.7			425	- 01			- 0/1	. 04	0.2				. 4 70
Rockford	26		• • • • •			• • • •			.05	. 10	-80	15	. 27		• 45			+	.05	.02		. 20	.10				1.15	-33				4.21
St. Charles	.05	0.2		1			1			21	1.02		. 28		. 10		1	.13	1.82		. 05	.05	T :			. 04	1024	.07				5. 29
Scales MoundStreator	.24								+ +													50	+			. 17	1.00	TS				6.03
Sycamore				• • • • •					02	+	. 08	20			. 18			.46	1.01	. DI	.06	.15	.03			.03	1.49	.50				5.42
Walnut	•43								+ 1	10.	.70	+	. 27		. I 2			0.30	1.30	T		.42				1.05	.39					. 5.22
Wheaton		-							00	+	0.2	1/3	28		. 20			. 35	.45	*O4	. 21	T					.00					6.04
Zion	60																									+	- 55	•35				3.83
	• 23	.01	1	•00	.00	.00	.00	• 00	.02	.15	.70	.21	.13	. 50	.15	.00	. (1)	.00	. 04	.01	.07	. 24	.02	.00	.00	. 21	1	.09	, 0,	.00		4.90
	٥٤	4								02	61	45	1.1		02	.02		. 28	. 08	+	.21	1.64	+			.03	1.68	.02		+		5.25
Bloomington	CEMTRAL DISTRICT.   OS   1															. 5.65																
Bushnell	.06	†								.25	1.10	.13	.23		.04	+		.50	.27	•16	•75	2.45	.05			.21	I . 36	. 03		. 16	0,	7 40
Carrollton	+	+	†							+	-41	.63	. 20		.13	+	+	.50	.10	†	• 58	2.28	†			+	.92	+		. 15		6.36
CharlestonCoatsburg	.25										1.85	1.33	.05					• 44	- 36		+	60				-01	2.29					7.09
Danville	40									.32	.39	.72	•43		-41	. 30		. 59	. 10		- 56	2.17				1.17	4.25	.03	• • • •	+		· 7.93 · 9.85
East Peoria	.30	l .								.10	1.00	. 20	. 23		.20			I.12	.65	†		.65	• • • •		'	+	2.45					. 6.90
Effingham	,20						• • •			.65	.55	1.30	•14													°33	1.33			. 09	)	. 12.77 . 8.01
Griggsville	+									.10	I.00	- 50			25			.15	1.50		. 30					.12	3.62			. +		- 5.78
Hannibal, Mo	1 18	†									.09	.29	.07		•05			80.	.23	.05	.05	.63			. 08	.12	1.50	.12				. 4.84
Hillsboro	†									. 06	.59	.89	. 06		. 25	+		1.09	.12	. 21	•93	1.90	• 06			, 26	2.07					. 7.78 . 5.98
LaHarpe g	†	†								1.62	1.10	+	.20					1.00	.40	†	+	†				+	11.90				1	. 5.12
Lexington	.83		+							. 23	. 50	.40	.10				****	.18	. 11		.22	1.01	+			+	1.75	.12		.   †		. 5-97
martinsville	.04									.43	. 51	1.00	1.10		. 33	•13		. 24	.42	+07	. 57	1.01	- I3			.46	1.54	•39		. 15	5	. 9.64
Mattoon	. 22									•35	.42	.71	.13		.35			. 30	22	2.00	F2	2 47	+			. 15	1.01	.02		. 04		. 6.72
Mt. Pulaski	.16	1	1							.07	.65	.55	. 05		. 14	.02		. 20	.09	. 14	. 18	2.08	7				5.42	- 26		10.		111.45
	.05									.51	.52	1.31	. 53		.50	.11		+35		.16	-45	1.63	.06			.14	1.40	.62				. 8.34
Peoria Philo	.21								+	-26	1.30	1.00	+			.10		.14	.21	. 30	• 30 43	2.51				. 29	2.09					8.71
Rantoul	.54	+						• • • •	.14	.52	.01	. 56			.17	.12		11.	.12	. 29	2.37	. 09				T. 27	2.11					7.20
Robinson Springfield	.32	+								.04	.90	.70	.14		• 72	.03		. 25	.12	.04	.33	2.24	+			.02	4.60	.14		+		9.65
Tuscola	.42	+			• • • •	• • • •	• • • •			.22	-51	.90	.OI		. 20	05		-37	.10	.33	2.18 1.40	1.90	+			1 .25	1.59	-04		. +	1::::	. 5.55
Averages	.18	†	+	.00	.00	.00	.00	.00	†	.29	.70	.61	.20	.00	,20	. 06	+	.50	. 28	.18	•62	1.27	.12	.00	+	. 23	2.08	.07	•00	.03	.00	5.74 5.74 8.71 7.20 14.01 9.65 8.86 5.55 7.64
SOUTHERN DISTRICT.																																
Albion						• • •				+ 02	1.27	1.60	1.57	• • • •	,60	.11	.31	.45	. 28	·95	1.07	* 06	1.72	.01		2.02	.17	. 28		+		9.20
Carlyle										-52	.82	1.51			. 22				.21	• 45	1.65	1.85	.95			1.26	2.47			. 02	2	. 11.93
Cisne	10.									•44 •41	.55	1.31	.72		.25	.15	.48	.34	.83	•59	·55	1.20	1.44	. 30		2.0	5 1.52	.40		00	5	. 11.99
Cobden	+									. 52	1.42	2.43	.86		.61	• 20	.12	-33	.56	1.85	2.07	.02	1.01			1.27	7 .84			. 05	5	0.29
Friend Grove	1,15	, O.								+	1.48	1.20	.88		.00		.06	-54	.02	1.24	1.15	†	1.85	.02		1.6	.70	•54	1	. +		. 11.38
Goiconda	.01									.01	.36	1.44	•48		1.15	.58	.14	. 25	10.	1.98	.35	+ 04	51	.30	••••	1.38	36.61	.36		+		. 8.93
Greenville	.02								.02	-45	.55	1.00	.05		.38			1.10	.18	.66	1.30	1.65	.45			.78	8 1.10			. 01	1	9.73
McLeansboro										-47	1.12	1.20	1.35		. 15	+	.07	. 26	.70	.87	.19	.78	.30			.6	5 .53	•55		· +		11.11
Mascoutah									†	.60	.41	.46	1.11		.58		.16	.18	1.88	.12	.58	1.51	-32		.05	1.0	3 1.19	.85		30		11.33
Mt. Vernon	. 17									.12	1.70	1.00	.55		.41		.24	.87	1.00	.85	1.40	.12	1.05			1.6	4 .75	.65		+		11.94
New Burnside	.03	3							†	.10	1.00	1.04	- 39		.04	.05	+	,15	.30	1.62	1.15	+02	.90	.11	†	1.2	7 1 20	. 56		13	5	10.97
SOUTHERN DISTRICT.  Albion Cairo Cairo Carlyle Chester Cisne Cobden Equality Friend Grove Goiconda Grayville Greenville Halliday boro McLeansboro Mascoutah Mt. Carmel Mt. Vernon New Burnside Oliney Plum Hill St. John St. Louis, Mo.	.23	3								.49	.71	.62	1.61		. 36	+	.04	.25	•77	·48	•93	2.30	.60			1.9	8 1.92	.80		. 06	5	. 13.05
St. John									+	•33	.27	1.01	1.32		.42		• 39	.65		•79	1 30	.33	1.51	• 34		-5	2 1.13	.69			0	9.98
St. Louis, MoTilden	+								+	.49	.90	1.48	.07		. 19	3	.30	. 26	.38	.85	•75	. 25	1.23			1.0	1 1.62			0	3	. 9.95
St. John St. Louis, Mo Tilden	.03	+	•00	00.	,00	.00	.00	.00	1 0	.29	.88	1.33	.60	•00	.46	. 09	• 20	.41	•39	.89	1.01	.71	.94	.06	+	1.0	3 .94	•34	.0	0 .00	2 .0	7.29
	. 10	1	1		• 00	.00	*00	.00			.,0	.02	. 2/	.00	. 2	, .04	.03	52	55		• 49	-13	. 20	.02			-70				1	

REPORT FOR APRIL, 1898

## ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

## WEATHER BUREAU.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE.

UNDER DIRECTION OF

### WILLIS L. MOORE

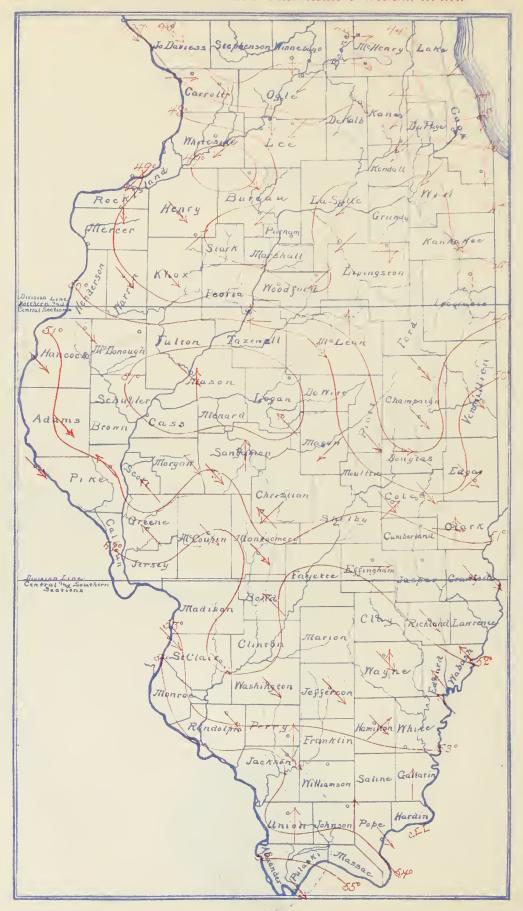
CHIEF OF WEATHER BUREAU

BY

CHARLES E. LINNEY,

SECTION DIRECTOR, CHICAGO, ILL.





U. S. PEPARTMENT OF AGRICULTURE,

## CLIMATE AND CROP SERVICE

OF THE

### WEATHER BUREAU.

Central Office, (Washington, D. C.)

(WILLIS L. MOORE, Chief.

# ILLINOIS SECTION, CHARLES E. LINNEY, Section Director, CHICAGO, ILL.

VOL. III.

CHICAGO, ILL.

NO. 4

Sleet storms occurred in the north half of the state on the 18th.

Fog prevailed along the upper Fox River valley on the 9th and over the northern district on the 22d.

Lunar halos were commonly observed on the 3d, 7th, 27th, 29th and 30th; solar halos on the 3d, 4th, 8th, 12th, 17th, 27th and 29th.

The station at Herrin, Williamson Co., has been transferred to Halfway in the same county. Mr. J. H. Williams is the new Observer.

Mr. Wm. Stickler, our former Observer at Lexington, has again returned to the fold, and will continue observations at that statiou, vice D. F. Trimmer, resigned.

Our old crop reporter at Pana, Mr. C. W. Sibley, has succeeded Mr. Will F. Jordan as Observer at that station, and regular reports may hereafter be expected.

We regret to announce the death of Mr. Dan E. Zook, our Voluntary Observer at Bushnell. Mr. Zook has been a faithful observer for a number of years and in his deat h the service losses a faithful worker and friend. The observations will be continued by Mr. O. W. Seeley a neighboring druggist.

Thunder storms were general over the state on the 8th, 9th 10th, 17th, 18th, and 25th, with scattered storms on the 3rd, 4th, 13th, 16th, 21st, 22nd. 26th, 28th, 29th, and 30th. Hail fell at many stations with the thunder storms of the 25th, and at solitary stations on the 8th, 9th, 10th, 17th, 18th and 26th.

The temperature of the month (49.6°), averaged nearly three degrees below normal, the deficiency in the southern district exceeding four degrees. But two periods of marked warmth occurred during the month, the first began on the 9th and, with little set-back, the temperature gradually rose

to the maximum temperature of the month on the 16th-17th; the second period of warmth began on the 26th and continued until the close of the month, the 30th proving a very warm day in the south half of the state. The highest remperature recorded during the month was 86° at Golconda on the 30th.

The cool weather on hand at the beginning of the month colliniated in the lowest temperature of the month on the 5th-6th. Freezing weather prevailed over the entire state, and in the northwest corner a minimum of 15° was observed at Scales Mound. Cool weather continued until the 8th. A second cool period began on the 18th and continued until the 25th; freezing weather prevailed over the northern district on the morning of the 21st. Low night temperatures were common throughout the month, and killing frosts prevailed until the 7th; light frosts until the 8th, and in the northern district, until the 27th; a few exposed points in the southern district even had light frosts on the morning of the 25th.

The extreme range in temperature was only 71° for the month, although the daily range was often large and the average of the greatest daily range was 35°.

The rainfall of the month came mostly in showers of limited area, and widely different amounts at near-by stations. Six shower periods passed over the state and of these three gave general rainfall; the 13th, 18th and 22d proving days with general and quite heavy rain. The average for the state (3.26 inches) was nearly the normal fall, the departure being but -0.19 of an inch.

The greatest fall measured was 5.70 inches at Grayville, closely followed by 5.46 inches at Friend Grove and 5.38 at Mc.Leansboro. The least fall was 0.76 at Chicago, and northeast counties generally had less than 2.00 inches, although light showers were frequent. The greatest fall in any 24 hours was 2.15 inches at Friend Grove on the 25th-26th.

Traces of snow prevailed over the north half of the state on the 4th and 5th, and measurable amounts fell at Aurora, St. Charles and Wheaton.

There were 10 days with .01 of an inch or more rainfall, and 11 clear, 9 partly cloudy and 10 cloudy days; nearly the normal month.

The prevailing wind direction of the month was N. W. with an average hourly velocity of 10.8 miles; highest velocity 48 miles from the N. E. at Chicago on the 5th.

The barometric pressure averaged 30.06 inches; highest pressure 30.56 at St. Louis on the 7th, lowest 29.35 inches at Grayville on the 13th. The average was high for a spring month and the range also was very large.

Note.—The mean temperature at Minonk, on page 5, should read 47.6°, departure —3.1°; at Charleston, 50.3° departure —3.3°; Hillsboro max. temp. 80° on the 17th; also on page 8 the precipitation at Peoria on the 30th should be .40 and total for the month 3.02 inches.

#### THE PROGRESS OF THE CROP SEASON.

Chicago, April 4, 1898.

March was a wet, warm month although it ended cold. The past week has been dry and cold, with sharp frosts throughout the state; the temperature averaged from 1 below in north to 6° below normal in central and southern counties, and rainfall reached slightly more than half inch in southwest counties; week ago Sunday was a day of general and heavy rain, and soils remain too wet for good work. Plowing and seeding are much delayed; some oats have been sown and seeding will be general this week, with favorable weather. Wheat is much improved since the rains and is looking well, although slightly winter killed in the southern district; rye is doing well, also clover, and grasses generally, with pastures nearly ready to receive stock. Gardening has been delayed, also potato planting; fruit seems to be but slightly injured by the freezing and in the southern district early blossoms are out.

### Chicago, April 11, 1898.

Heavy rains fell over the southern part of the state at the beginning of the week. followed by severe freezing weather on the 5th, 6th and 7th. The temperature averaged from 3° below normal in extreme north to 8° below in extreme south; damage by frost seems to be confined to slight injury in south half of state to early fruits, young clever and wheat. The last half of the week was favorable and good progress was made; oats seeding is well advanced in central and north-central counties and most of the crop will go in this week; early potato planting and gardening are well begun, except in northern Wheat, rye and grasses advanced slowly owing to the cold, but are generally in good condition; stock will be turned into many pastures in the south half of the state this week; waters are subsiding, roads improving and fields drying out rapidly.

#### CHICAGO, APRIL 18, 1898.

The temperature of the week averaged from 3° daily above normal in extreme south to about 6° daily above in extreme north, the nights being cool; rainfall increased from | deal and is spreading and growing nicely, prospects favora trace in northeast counties to more than an inch along the able for a moderate crop; plowing and planting just begun; entire west part of the state. The week was generally favorable and much progress was made, most of the oat crop going in, while plowing. potato planting and gardening are well begun, and a few fields of corn have been planted in extreme southern counties. Wheat, rye and grasses are generally doing well, although grasses grow slowly; stock is being pastured in the southern district. Fruits show but slight injury from frost and peaches, pears, plums. cherries and apricots are blooming in the south half, with apples ready to open.

### Chicago, April 25, 1898.

The past week was rather too cold and wet over most of the state for successful growth or work; the temperature averaged from 1° to 3° below normal and rainfall increased from less than a half inch in extreme south and northeast counties to more than an inch in northern, central and western. Oats seeding is practically finished and early sown oats are up, with good stand; wheat and rye are growing finely, pastures and meadows slowly, but stock is being pastured in the south half of the state. Plowing for corn is general, although retarded by wet weather; corn planting is well begun in extreme south and much will go in this week: fruit buds are opening in the northern district and trees are blooming profusely in central and southern, with the exception of early apples, which are light; gardening and potato planting continue in central and northern counties.

### OBSERVERS NOTES.

HAVANA.—Illinois River was 18.0 ft. above low water on the 2nd; 11.3 on the 30th. J. M. Ruggles.

RANTOUL. -- Ice formed on the morning of the 21st; corn planting began on the 28th. H. B. Clark.

BLOOMINGTON. -No violent storms during the month, good for farm work although a triffe cool.

M. P. Lackland.

CISNE.—Season backward because of wet weather; little corn ground prepared and oats put in with soil too wet.

Effinguam.—The Catholic Church in this city was struck by lightning on the 10th at 2. p.m.; damage was adjusted at \$275.00. Alfred Fitch,

Lanark.—Some corn was planted on the 28th; oats seeding finished on the 20th; pastures just becoming good at the close of the month; willow and box elder trees began to leaf on the 15th. M. N. Wertz.

KNOXVILLE. — April was a cool month, the nights being too cool for growing crops; oats coming up well; pastures and meadows slowly; breaking ground for corn general; peaches in full bloom, apples, pears and plums not out at the close of the month. C. N. Butt.

FRIEND GROVE.—Spring began very early, but turned out to be very late because of delay from rains; very little corn ground broke yet; only about half crop of oats sown; wheat has made fair progress, gardens very backward, potatoes coming up slowly; fruit prospects good: pastures nice and stock all out and doing well. V. E. Majors.

Winchester.—Month has been cold and quite unfavorable for spring work; wheat seems to have come out a good early gardens coming slowly; pastures fine, clover injured to some extent; prospects for a fine crop of apples as well as all other fruits. Geo. Hurd.

Barometer and Wind Table.

		Bare	omet	er.				Wind		
Stations.						-0A	our-	Max	imum citv.	
Stations.	Mean.	Highest.	Date.	Lowest.	Date.	Total move- ment.	Average bourly.	Miles.	Direc- tion.	Date.
Bloomington Cairo Chicago, Davenport Dubuque Galva Grayville Ilannibal Keokuk Kishwaukee Minonk Olney Oswego Robinson St. Louis Springfield Keynolds Rushville	30.05 30.05 30.08 30.04 30.06 30.09 30.02 30.10 30.07 30.05 30.05 30.04 30.09 30.00 30.06	30.48 30.51 30.48 30.47 30.47 30.53 30.53 30.53 30.40 30.44 30.40 30.55 30.55	6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	29.53 29.59 29.60 29.51 29.69 29.55 29.35 29.67 29.57 29.57 29.50 29.50 29.50 29.50 29.50	13 13 13 13 13 13 13 13 13 13 13 13 13 1	7,551 13,478 5,687 6,293 7,592 6,193 7,993 7,661	10.5 18.7 7.9 8.7 10.5 8.6	46 48 30 32 42 32 47 30	w. ne. nw. nw. nw. nw.	13 5 25 20 13 13
Averages	30.06	30.48		29.54		7,794	10.8			

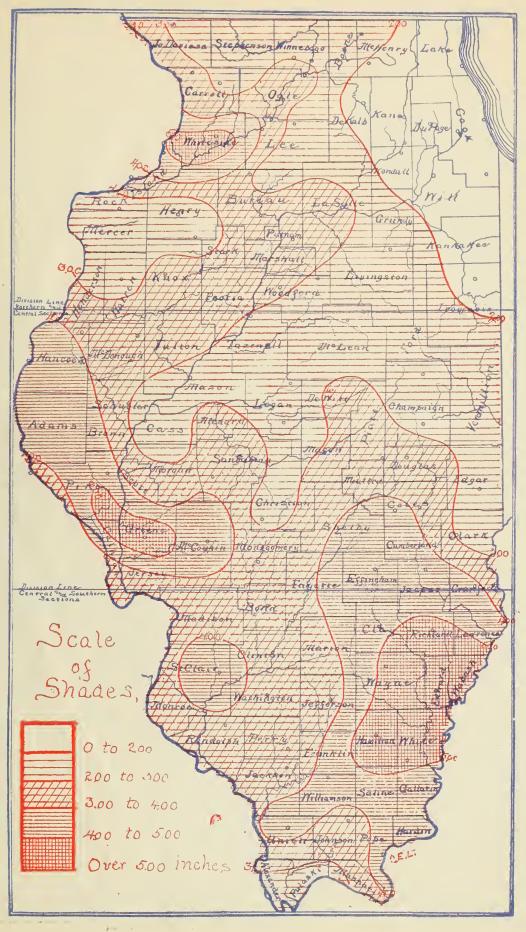
### Climatological data for April, 1898.

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Stations.	Counties.	Elevation feet.	Length of record, years.	Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal	Greatest in 24 hours.	Total snowfall unmelted.	Number rainy days.	Number clear days.	Number partly goloudy days.	cloudy	Prevailing direction wind.	Observer
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Note,—Unless otherwise indicated the highest, lowest and mean temperatures are from maximum and minimum thermometers, "Highest and lowest temperature from observed readings. 1. Mean temperature from 7+2+9+9+4: 2. 8+8p-2: 3. 7+7p-2: 4. 6+6p-2: 5. 7+2p-2: a. b. c. d. etc. number day missing. QU. S. Weather Bureau Stations. + Same temperature occurred on more than one day. + Trace in precipitation column when amount is less than 0.01 of an inch. All records are used in determining State or district means, but State and district departures are determined by comparison of current data of only such stations as have normals. §Partially estimated.

Maximum and minimum temperatures for April, 1898.

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### Daily precipitation for April, 1898.

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Wheaton	.11							.07	.51				. 06					.IO	.23			, 22						+				1.31
Wlnnebago	.02							. 20	.40	.07			.80	.02				.30	.80			.40										3.39
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Griggsville Hannibal, Mo				-75	†			.60		+			1.21				.30	.60	.II			.43	. 20		+					-75		4.95
Havana			.14	.72	+			.03		+			•68	-13				·31				.60	.03		. 38			.03		. 50		2.90
Hillsboro					†				. 09	+		••••	.63 1.82	•05			.04	.11	.04		+	.30 I.16	. 29		.IO	.04		+		.35		4.80
LaHarpe Lexington				.19			• • • •	.09	.19			+	1.19				†	.31	.24	+	+	1.20			.02	.12		+		- 36		3.91
			†	•55				+	.13	+			-55				. 25	.10	+		+	.50	.22		.21	.21		.01		.65		3.58
Martinsville				.30				+	.07				.32				.10	-75	.33		+	. 13	.51									
Morrisonville			†	.61	+			†	.10	.05			.48					.14			+ 1		. 25		•43	- 36	::::	.05		-45		2.92
Palestine				-55	.15			†	.03	.31			.50	.04				.25	.17	1		.00	.20		- 48	1.00		.05		+		3.82
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SOUTHERN DISTRICT.		,		-37					,,,									1				. 440										
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Carlyle		•06		.68	.07	• • • • •		• • • •	. 04				. 15	.05	• • • •			.30	.01			. 25	.05		.39	.40		.08		.01		3.91
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Friend Grove			+	.90	.42				+	.08			.68	.05				. 28	.42		+	†	.00		.14	2.01		.04				5.46
Grayville				.89	•52				†	.03			.66	.05				. 42	.04		+	.10	.36	+	.06	2.03		.05				5.79
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											• • • • •		61	+				.50			.04				-72	1.78		00		+		5.00
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St. Louis, Mo	†		.05	1.09	.03			†		.01			1.00	.06																		
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A verages for the State	.02	1	.02	• 37	.05	.00	•00	. 05	.16	.14	.00	†	-74	.03	.00	.00	.02	.30	. 16	T	10.	.32	•10	1	. 24	+35	•00	.04	.00	.17	• • • •	3.20

<sup>†</sup> Trace when precipitation is less than o.or of an inch.

UNIVERSITY of ILLINOIS

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### U. S. DEPARTMENT OF AGRICULTURE.

REPORT FOR MAY, 1898

### ILLINOIS SECTION

OF THE

# LIMATE AND CROP SERVICE

OF THE

# WEATHER BUREAU.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE.

UNDER DIRECTION OF

WILLIS L. MOORE

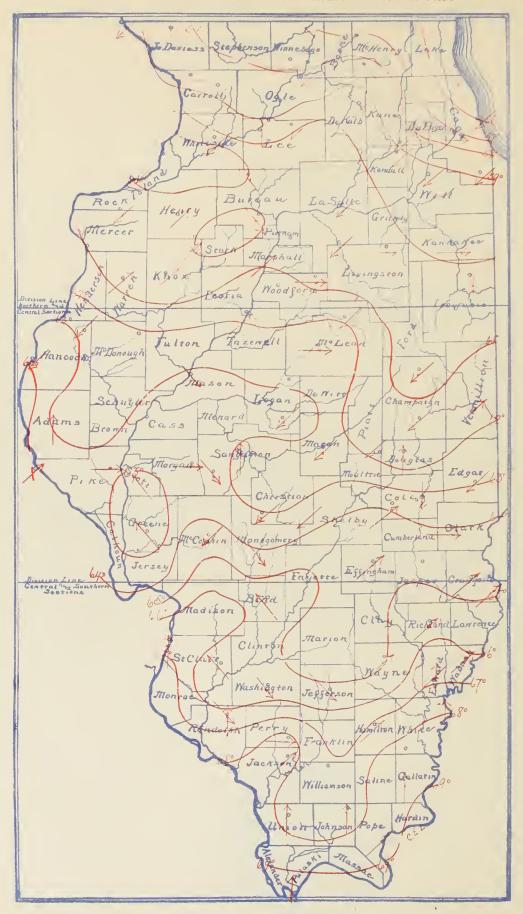
CHIEF OF WEATHER BUREAU

BY

CHARLES E. LINNEY,

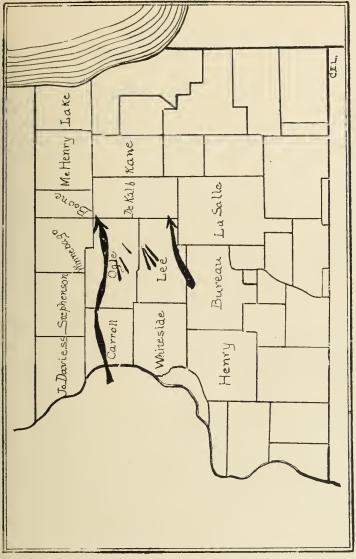
SECTION DIRECTOR, CHICAGO, ILL.





### SUPPLEMENT.

#### THE TORNADOES OF MAY 18, 1898.



existed over eastern Iowa, northern Illinois and southern looked not unlike a hugh serpent trailing from the sky." and central Wisconsin. Tornadoes occurred in eastern Iowa of Forreston, Adeline and Stillman Valley.

witnesses were numerous, as the storm came to its end be- caused by the storm of about one year ago.

fore 6.30 p.m; and the concensus of opinion is that a tornado was present over the greater portion of the distance; the ominous black cloud, with its pendant trunk, was seen by hundreds as it rose and fell, bounding from one stretch of country to another.

East of Stillman Valley the storm rapidly dissipated and little damage resulted in Marion Township or in the western part of DeKalb Co., although severe thunderstorms occurred over the entire north half of the state, and large hail (often jagged pieces of ice) fell in northern counties eastward to Kane and McHenry.

Another tornado development occurred to the south of the main track in the extreme north part of Bureau County, from whence it moved northeastward into Lee County, dissipating just in the edge of DeKalb Co. The hour of its

development and destructive force mark it as a part of the general tornadic condition existing over the northern part

of the state during that afternoon.

This storm and the greater one to the north were on the same meridian at about the same time, viz 5.30 p.m., and their movement eastward continued for nearly two hours. Our Observer at Mt. Carroll reports the storm there at about 5.15 p.m.; our Observer at Adeline reports it there at shortly before 6 p.m., while it broke over Stillman Valley at 6.06 p.m.

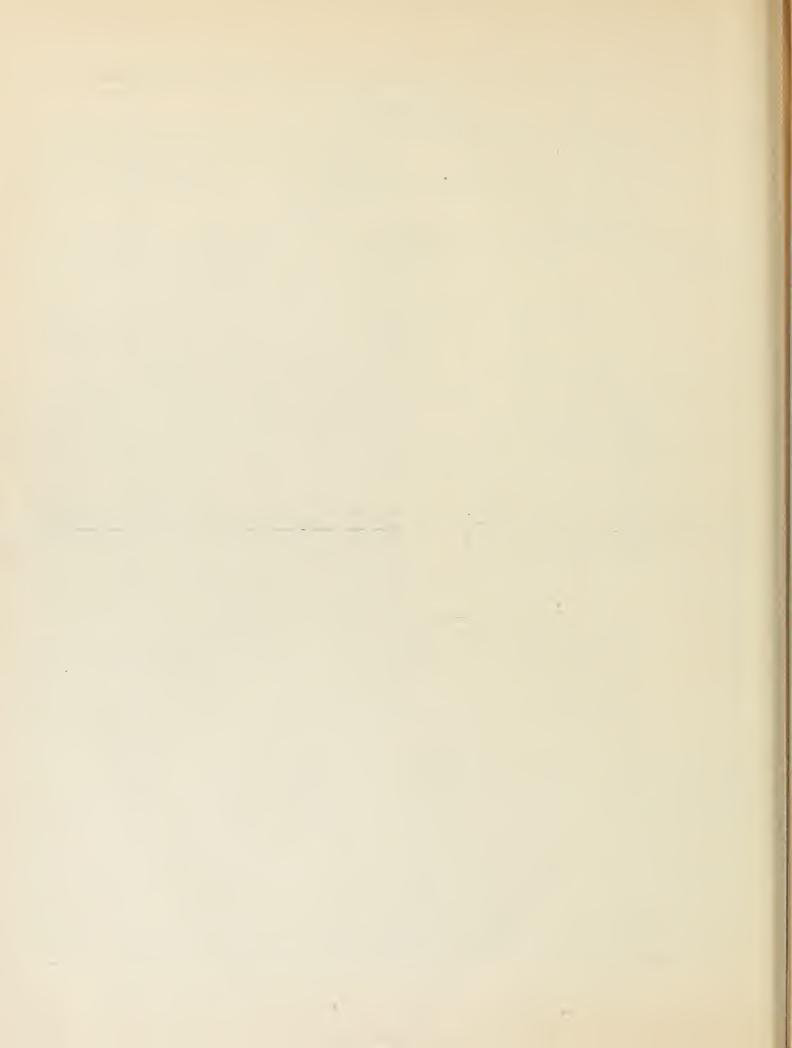
The path of destructive force varied in width from 100 ft to about three-quarters of a mile and practically everything within the path was destroyed. Our Observer at Lanark (Mr. M. N. Wertz) says: "Nothing in the shape of buildings was left standing in its path; the roar of the storm was plainly heard at a distance of 8 miles; some hail and a heavy rain fell for 20 minutes. Those who were in the storm track report the coming together of clouds from different directions and then the movement of the storm from west eastward; its color was said to be bluish, green and orange: its movement or whirl from left to right; no great change in temperature occurred."

At Adeline, Mr. J. A. Ettinger says: "The storm struck here about 6 p.m. demolishing the German Evangelical Church and eleven dwellings and outbuildings and killing two per-

sons; everything in its path was leveled.'

At Kishwaukee, Mr. George Stevens, says: "The tornado passed four miles south at 6.06 p.m. on the 18th. It moved very slowly, a good horse could have run away from it. The motion of the mass was from left to right; no electricity was visible in the storm cloud, although a sharp thunder-On the afternoon of the 18th of May a tornadic condition storm occurred just before it appeared. The 'spout'

The list of dead is as follows: In Carroll Co., Mr. Nichoshortly after noon; press reports show the development of las Stauber, Mrs. John Kessler, Mr. Samuel Hoover; in Ogle destructive force at a point near Tipton, from whence well Co., Mr. Michael Nelson, Mrs. Nelson and two children, Mr. pronounced tornadic storms can probably be traced to a Richard Reese, Mr. Thos. Mullen, Mr. Eberhard Schupoint beyond the eastern border of Ogle County, Ill. As maker, Mrs. Johanna Mass and three children; in Lee Co., near as can be ascertained the storm cloud, or its destruc- Mrs. Frank Chichester; in Bureau Co., Mrs. Hiram Smith; tive force, was first noticed in Illinois crossing the Missis- 16 in all, while twice as many more were injured more or sippi River at a point about a mile and a half below Savanna less seriously. The destruction of barns, cribs, outbuilding at about 4.45 p.m.; from this point the movement of the granaries, houses, dwellings, churches, schools, bridges, storm cloud was east of northeast through Carroll County, trees, both fruit and forest, growing crops, cattle, and stock a distance of 27 miles, then east by southeast through Ogle of all kinds, poultry and fowls was enormous, the aggregate County, reaching its greatest destructive force in the villages loss probably approaching \$1,000,000. Havoc was wrought everywhere, the destruction approaching that caused by the During its progress through Carroll and Ogle Counties eye greater storm of June 20th, 1890, and far exceeding that



U. S. DEPARTMENT OF AGRICULTURE.

# CLIMATE AND CROP SERVICE

OF THE

### WEATHER BUREAU.

CENTRAL OFFICE: WASHINGTON, D. C.

### ILLINOIS SECTION,

CHARLES E. LINNEY, Section Director,

CHICAGO, ILL.

VOL. III.

CHICAGO, ILL.

NO. 5

Sleet in small amounts fell at a few northern stations on the 4th and 5th.

Fog occurred at individual stations on the 2d, 5th, 10th, 11th, 20th, 22d, 29th and 30th.

Solar halos were observed on the 2d, 5th to 7th, 10th, 13th; 15th, 16th to 18th, 21st, 27th and 31st; lunar halos on the 1st to 3d and 5th to 10th.

Light frost prevailing on the morning of the 7th as far south as Rantoul and Springfield, and over the northern counties on the 12th, 17th and 26th; killing frost only occurred along the extreme northern border on the 6th.

Thunderstorms occurred at some point within the state on every day during the month except the 7th, 8th, 22d, 23d, and 26th; those on the 1st, 10th. 14th to 16th, 18th to 21st, 24th, 27th and 29th, being general and severe. Hail fell with the storms of the 1st, 5th, 10th, 18th, 19th, 21st, 27th and 29th; the hail on the 18th being especially large and heavy over northern counties.

There were 32 reports of loss by lightning returned during May, which show 7 dwellings damage to the extent of \$378: 12 barns and stables damaged (or burned) causing an aggregate loss (with contents) of \$984; 29 head of stock killed causing an aggregate loss of \$776, a total reported loss by lightning of \$2138. A hotel and school-house were also reported struck with slight damage. The reports returned were largely from northern counties, and the greatest losses occurred on the 18th to 21st and 27th, the losses on the 19th being especially heavy.

The temperature of the month averaged 62.2° which is practically the normal temperature for May; the average in the central district was just normal, while in the northern

district it ran slightly below and in the southern slightly above.

Only one period of very low temperature occurred, this came on the morning of the 3rd and ended with the morning of the 8th; freezing temperatures were reported at a few northern stations on the 4th, 5th and 6th. A second period of cool weather, slightly below the general average, came on the 12th and continued until the 17th, and a third came on the 25th and ended the 26th.

Warm weather prevailed at the beginning of the month and continued until the evening of the 2d; a second warm wave followed from the 8th to the 11th; a third from the 18th to the 24th and a fourth from the 27th to the close of the month. The 24th was the warmest day with an average temperature of 72°. The highest recorded was 93° at Equality on the 28th, lowest 30° at Scales Mound on the. 6th and at Lanark on the 12th. This gives an extreme range in temperature of 63°, which is rather low for the month of May. The average greatest daily range was 34°

The precipitation of the month was heavy, averaging 5.78 inches, which is 1.55 inches above normal. The southern district reached the high average of 6.56 inches, which is 1.95 inches above normal. The precipitation came mostly with local thunderstorms, still five rain periods are quite plainly seen. The first, which prevailed at the beginning of the month, continued until the 6th; the second began on the 9th and joined with the third in the southern district on the 12th-13th; the third continued from the 14th to the 16th; the fourth from the 18th to the 22d, and the fifth from the 27th to the 30th. The 21st was the day with greatest average fall, reaching 0.70 of an inch; heavy and general rain also fell on the 5th, 14th, 19th, 20th, 27th and 29th.

The greatest amount registered within the state was 9.55 inches at Caryle, closely followed by 9.44 at Hallidayboro, 9,42 at Bloomington and 9.30 at Cambridge. The least measured was 2.23 inches at Chicago; the greatest in any 24 hours was 4.14 inches at Carlyle on the 29th. Excessive rainfall occurred at a number of stations.

There were 14 days with 0.01 of an inch or more rainfall, also 11 clear, 10 partly cloudy and 10 cloudy days during the month. The prevailing wind direction was NE, with an average hourly velocity of 9.5 miles; highest velocity 62 miles from the SW, at St. Louis on the first.

The barometeric pressure averaged 29.94 inches; highest 30.29 on the 3rd at Chicago and Oswego; lowest 29.49 at Dubuque on the 27th and at Davenport on the 29th. The climatic features of the month, barring heavy rainfall and large number of rainy days, were nearly normal.

Note.—The following corrections should be made on page 5: Danville, mean temp. 62.0°, departure, —1.6, min. 93° on 4th, range 37; Albion, mean. 66.7°, plus 0.9; on page 4 the average wind velocity should be 9.5 instead of 8.5.

1.0

#### THE PROGRESS OF THE CROP SEASON.

Chicago, May 2, 1898.

The past week was one of nearly normal temperature and heavy rainfall, except in northeast and northwest counties. In most of the state rather too much water fell, delaying work. Preparation of corn land has been pushed as rapidly as possible and planting has begun even in the northern district, with much of the crop to go in this and next week. Oats show a fine even stand; wheat, rye and grasses are making excellent growth, stock being generally pastured; early gardens and potatoes are coming up, and the early planting is practically finished; fruits everywhere promise well; they are setting heavily in the south half and show abundant blooms in the north half. Warm and dry weather is needed.

CHICAGO, MAY 9, 1897.

The temperature of the past week averaged from 2° below normal in north to 6° below in southern counties, and rainfall increased from light showers in northern counties to more than 2.50 inches in the central portion of the southern district; generally the week was far too wet, cold and cloudy for farm work or good growth. Small grains, however, seemed to do well and wheat, rye and oats are growing finely; wheat shows great improvement over its condition one month since. Pastures and meadows also did well; gardens and potatoes only fair. Little corn land was plowed and less planted, but with favorable weather this week the work will be general and rapid. Fruits still promise well, no injury resulting from the light frosts of the week.

CHICAGO, MAY 16, 1898.

The temperature of the week was about normal, and rainfall light in northeast counties and extreme south, elsewhere abundant, with surplus in many central and west-central counties, preventing work. Corn planting was general and about one-half of the crop is in, remainder to go in rapidly with favorable weather. Early fields are coming up nicely. Wheat, rye, oats and grasses are in excellent condition, wheat and rye beginning to head; chinch bugs are appearing on old corn land and along timber lots. Gardens and potatoes did fairly well, but bugs promise to trouble potatoes. Fruit prospects excellent, strawberries coming to market in extreme south. Broomcorn land ready and the crop will go in this week.

CHICAGO, MAY 23, 1898.

The week averaged from 2° to 5° daily above normal temperature and from an inch of rain along the immediate Lake shore in Cook County to five inches in southwest Christian, falls of over three inches being common. A great deal too much water fell, and low lands are flooded and work everywhere delayed; little progress was made in corn fields: early fields are coming up well and cultivators are beginning to run in extreme south. Wheat, rye, oats and grasses made splendid growth, wheat and rye heading, and clover beginning to bloom in south; potatoes and gardens are doing well, fruits still in fine condition: dry weather is much needed, especially in west-central counties.

CHICAGO, MAY 30, 1898.

The past week was warm and generally highly favorable, temperature averaging from about normal in northeast counties to 4° daily above over the central and southern district; rainfall came in heavy local showers of small area, mostly at the close of the week. Corn planting was taken up with a will and much of the crop is now in, with the balance to go in this week, if weather permits; early fields

are being cultivated over the entire state, and the stand is generally good. Wheat, rye, oats and grasses did splendidly, wheat and rye are generally heading, with both blooming in southern counties; the hay crop promises to be heavy. Gardens and potatoes did well; fruits are dropping quite badly in the south half of the state, and apples and plumpromise to be short, strawberries and gooseberries are coming to market plentifully in the southern counties.

#### OBSERVERS NOTES.

Winnebago.—On the 18th a funnel shaped cloud was seen 7 miles south of here at 6 p.m., moving eastward.

Frank Osborn.

CAMBRIDGE.—Very heavy thunderstorm on the evening of the 20th, 1.10 inches of rainfall in less than one hour.

S. B. Randall.

Sycamore.—Large hail-stones, breaking window glass, fell at Courtland, four miles south, on the 18th. Roswell Dow.

Palestine.—Wabash River overflowed the low lands on the 20th destroying corn; seven-year locust have appeared here. John E. Templeton.

Galva.—During the storm on the 27th not less than 1.40 inches of rain fell in 20 minutes; cellars flooded, fields washed badly.

F. U. White.

BLOOMINGTON.—On the 30th 1.13 inches of rain fell in less than an hour; on the 18th 0.62 of an inch fell in less than 15 minutes.

M. P. Lackland.

HAVANA.—Illinois River 11.3 ft. above low water on the 1st, 13.6 above on the 31st and falling; house struck by lightning on the 27th.

J. M. Ruggles.

Dixon.—Night of the 18th a tornado did much damage in south part of Lee County; one woman killed just south of Lee in Bureau County.

Eustace Shaw.

KISHWAUKEE.—A tornado occurred on the 18th at 6.05 p.m., crossing the country four miles south of this station, passing from southwest to northeast. At Stillman Valley five persons were killed and 20 buildings destroyed.

George Stevens.

Barometer and Wind Table.

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		Bar	omet	er.				Wind		
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Stations.	Меап.	Highest.	Date.	Lowest.	Date.	Total move- ment.	Average hour ly.	Miles.	Diree- tion.	Date.
Bloomington Cairo Chicago, Davenport Dabuque Galva Grayville Ilannibal Keokuk Kishwaukee Minonk Olney Oswego Robinson St. Louis Springfield Reynolds Rushville	29.96 29.94 29.96 29.91 29.52 29.95 29.95 29.95 29.92 29.94 29.93 39.94 29.93	30. 21 30. 10 30. 29 30. 23 30. 27 30. 26 30. 16 30. 17 30. 21 30. 14 30. 29 30. 12 30. 18 30. 20	4 13 3 4 4 3 31 3 3 3 3 3 3 3 3 3 3 3 3	29.63 29.69 29.59 29.49 29.55 29.66 29.56 29.57 29.72 29.77 29.64 29.60	27 27 28 29 27 -7 27 27 27 27 28 27 28 27 28 27 27 27	6,207 12,795 5,680 5,436 6,825 5,555	8.3 17.3 7.6 7.3 9.2 7.5	38 48 41 28 37 48 62 30	sw. w. nw. se.	21 19 18 21 21 18
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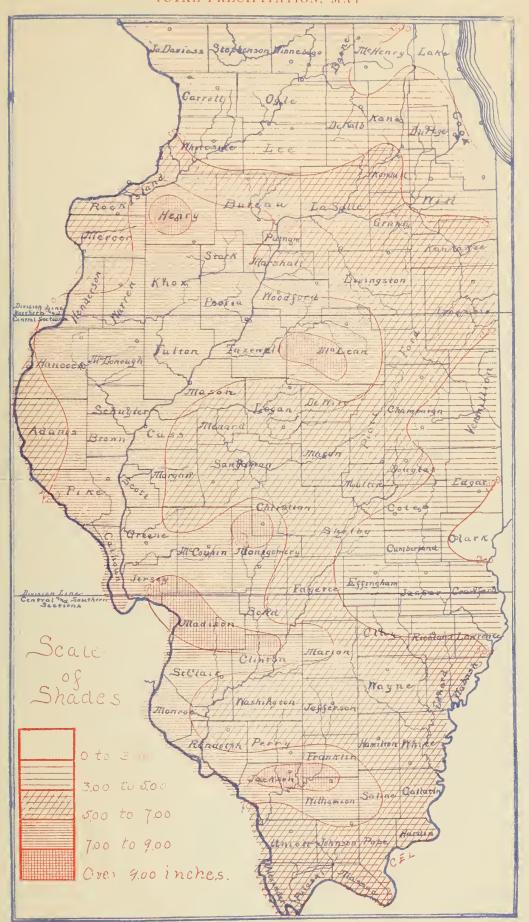
#### Climatological data for May, 1998

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NORTHERN DISTRICT.	Loo *v	9.00		60 T		82	24	20												
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CENTRAL DISTRICT.  Alexander Bloomington. Carlinville. Carrollton Charleston. Coatsburg Danville Decatur. Effingharn Griggsville Hannibal, Mo. Havana. Hillsboro. Keokuk, Ia. La Harpe Lexington j. Martinsville a Mattoon. Morrisonville. Mt. Pulaski. Palestine Pana. Paris Peoria. Philo. Rantoul Robinson Springfield. Tuscola. Winchester Averages Southern district	Morgan. McLean McCoupin Green Coles. Adams Vermillion Macon. Effingham Pike. Marion. Mason Montgomery Lee. Hancock McLean Clark Coles. Christian Logan Crawford Christian Edgar Peoria. Champaign Champaign Crawford Sangamon Douglas. Scott. *I	660 720 613 685 690 650 534 475 676 676 800 610 731 638 685 500 519 700 600 519 700 644 664	5 42 13 6 2 16 5	63.6 62.5 64.4 61.2 62.8 61.6 62.7 64.5 63.4 63.9 62.6 63.4 64.2 61.8 63.3 63.9 62.6 62.6 62.6 62.6 62.6 62.6 62.6 62	-1.1 +0.2 +1.0 -2.6 -0.1 -1.1 -2.0 -0.5 +2.6 -0.1 +1.0 -0.6 -0.1 +1.4 -0.2 -0.6 +1.6 +1.6 +1.4 +1.3 -0.4 0.0 -1.9 -0.2 -1.3 -0.5 -0.5 -0.5 -0.5 -0.5 -0.6 -0.5 -0.5 -0.6 -0.5 -0.6 -0.5 -0.6 -0.5 -0.6 -0.5 -0.6 -0.5 -0.6 -0.5 -0.6 -0.5 -0.6 -0.5 -0.6 -0.5 -0.6 -0.5 -0.6 -0.5 -0.6 -0.5 -0.6 -0.5 -0.6 -0.5 -0.6 -0.5 -0.5 -0.6 -0.5 -0.6 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5 -0.5	88 85 88 86 84 88 87 89 89 89 89 89 89 89 89 89 89 89 89 89	24 24 24 24 24 24 24 24 24 24 24 24 24 18 18 18 18 18 18 18 18 18 18 24 24 24 24 24 24 24 24 24 24 24 24 24	41 36 39 38 40 42 39 41 40 42 39 41 40 42 39 41 40 38 42 38 40 41 42 43 43 44 43 44 45 46 47 47 48 48 48 48 48 48 48 48 48 48	4 <sup>†</sup> 7,6 7,6 12 11 7,6 4 4 4 <sup>†</sup> 6,6 5,7 7,7 6,5 13,4 4,6 4,6 4,6 4,6 4,6 4,7 4,6 4,6 4,7 4,6 4,6 4,7 4,7 4,6 4,7 4,7 4,7 4,7 4,7 4,7 4,7 4,7 4,7 4,7	35 40 32 34 45 36 30 36 36 36 36 36 36 36 36 37 36 36 37 37 38 38 38 38 38 38 38 38 38 38 38 38 38	5.83 9.42 7.758 7.33 9.03 3.98 4.79 0.69 7.03 3.94 8.56 6.07 2.79 9.14 5.54 4.90 9.14 5.55 5.54 4.91 9.14 5.70 6.90 9.14 5.71 6.71 6.71 6.71 6.71 6.71 6.71 6.71 6	+1.43 +4.60 +3.29 +2.61 +0.61 +2.59 -0.06 +1.24 +3.86 +1.27 -0.92 +4.36 +1.71 -1.21 +1.76 +0.63 +1.71 +1.76 +0.83 +1.71 +1.80	1.79 1.60 2.27 1.18 0.90 1.56 1.38 1.10 1.37 3.60 0.55 1.37 3.96 1.30 0.55 1.44 0.55 1.43 1.61 1.56 1.37 1.37 1.37 1.37 1.37 1.37 1.39 1.40 1.50 1.39 1.39 1.39 1.39 1.40 1.39 1.40 1.39 1.40 1.40 1.40 1.40 1.40 1.40 1.40 1.40		17 16 17 14 15 12 20 13 16 15 15 18 19 18 18 14 15 16 16 16 16 16 16 16 16 16 16 16 16 16	8 13 11 10 9 11 16 9 16 11 11 15 10 12 7 7	8 10 10 8 8 14 4 20 11 11 8 16 11 11 10 9 13 12 11 12 11 11 11 11 11 11 11 11 11 11	15 8 10 13 8 10 114 8 8 8 8 10 6 6 6 111 8 8 8 8 110 11 11 11 10 11 1 8 8 9 10 10	W. W. W. ne. se. n. sw. ne. sw. nw. e. ne. sw. s. ne.	George II. Hall. Prof. M. P. Lackland. R. O. Purviance. Prof. Clyde Slone. Jacoh B. Dazey. Dr. J. R. Lambert. Prof. R. W. Sharpe. Prof. J. H. Coonradt. Alfred Fitch. Emily R. Gray. R. L. Anderson. Genl. J. M. Ruggles. P. J. Edwards. Fred Z. Gosewisch. J. B. Sheapley. J. B. Sheapley. Jos. Withington. Harry Grundy. Z. K. Wood. John E. Templeton. C. W. Sibley. Albert II. Lycan. Dr. Fred Brendel. H. A. Burr. II. B. Clark. A. P. Woodworth. John Craig. G. E. W. Lester. George Hurd.
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Note,—Unless otherwise indicated the highest lowest and mean temperatures are from maximum and minimum thermometers. \*Highest and lowest temperature from observed readings. 1. Mean temperature from 7+2+9+9+4: 2. 8a+8p+2: 3. 7a+7p+2: 4. 6a+6p+2: 5. 7a+2p+2. a. b. c. d. etc. number days missing. QU. S. Weather Bureau Stations. + Same temperature occurred on more than one day. + Trace in precipitation column when amount is less than 0.01 of an inch. All records are used in determining State or district means, but State and district departures are determined by comparison of current data of only such stations as have normals. §Partially estimated.

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NORTHERN DISTRICT.															The state of the s						1											
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('hemung'	. 30			.05	.00			****																							.,	9.00
Davenport Ia	18			0.1	• 3~		7		. 04	0.4	de			.01	.07			. 13	. 21	. 32	.34	1 .		٠, ١				.4	7	-		4.23
Dubuque, Ia	0.4	12		.05	. 30				.12	1			• • •	. 40	.12		]	.32	.45	-53	.39	.01.					. 2	. 21	. ^1	• • • > >		4 00
Dwight	.28	+	.06	.14	.80				.11		.11			1.10	.70	.2)		.21	.69	. 24	1.04						- 38		.30			4.47
Ft. Sheridan	. 36		.03		.22				+		4.			4				./4	. 33	* 2/4	. 4.9						1	-57				4.24
Glenwood	10				60				.00					.02	.02	• IO		. 91	1.42	. 20	. 49	.02		.90			70,00	003	3	. 01	1	5 06
Henry Hospital Joliet	.14			.07	.90				.05		.00			.00	.88	. 29		. 23	10.	1.17	.07			7 .			.40	+45		• 3		5.56
Knoxville	9		.33	. 04	1.00			• • • •	.08		06	• • • • •		-31	. 24			. 22	1.07	.01							.03	.02	.13	. 1		3.74
Lanark	28	12		4-	*01				.05					.10	T			. 25	-42	.71	.40	Τ					.7	+02	60	. (2		3.77
Martinton	.02		101	.02	. 40 Xo	( ' )			.01	. 31	• 54			.00	.08	. 30		-43	.03		27						.05	. 1F	. 52	. 22	+	5.00
Oswego	. 32				60				.10	. 15	.04			0.40	•93	. 20		•42 :	35	.73	.20 .			. 30			* 22		. 90		+	6.00
Ottawa	.04			. 26	24		)		. 10					. 33	.02			* 05 1	70	.01	.33		• • • •				1.32	.07	. 211		+	5.50
Rilev	. 00	. 03			22				.10	.03	. 00			.42	.77			.32 1	. 55	•45	. 2.	. 62 .		01 .			.32	• I c	.32			5.44
Round Grove	. 30				28					de				20	. 20			.00 1	.30	. 21	. 23	. 24					- 142	7	. 0			4.30
Scales Mound	.05	.63		.04	.09				.02	.01	+			.75	+			.80		. 95	.10	.03			1111		.42	.01	. 15			4.07
Sycamore	7.4	4		0.2	4.0	.03			1	.0/	. 20			.40	1.20	. 20		. 4.)	.13	.3/	. 1.						.03	.10	.03	. 119	. 28	6.00
Walnut	. 20			. 20	*54				.06		.31			.74	.80	.14		. 32 1	. 06	+62	.50 .				• • •		.98	.02	•73	.02		7.30
Wheaton	26			+	24				* 10						.01				* 14-5	. 74								1.21	0 4 49	.09		5.22
Zion	.24	.16		+	.10		1.		+	+	+			* 14	.40			.40	.40	20	.20	. 12	• • •				.40		- 50			3·5 <sup>2</sup> 3·2 <sup>2</sup>
Averages	. 22	.03	. 01	.07	-40	+	•00	. 00	.07	.02	.07	.00	.00	.41	•35	.07	.00	.42	.75	•45	•44	.02	OC.	.08	.00	. 90	-47	.15	.32	.05	.02	4.95
Alexander	.44		10.	.30	. 28	. 12			+	. 30	.02	. 21	.01	.51	. 22	. 27		- 16	10	1	.79 .	(					. 06		.40	+		5.83
	.72	.12		. 22	.42					. 14	* 10			. 24	.92			.30	. 591		30	.30 .					021		- 44	+44		0.64
Bloomington	. 15			-	78											•72 •43																
Carlinville	†	+	•30	.30	.36	.56		,		.46	+	.48	.01	.71	.18	.56		.24	. 26	. 36	.98 .						† ,		.52 .			7-33
Coatsburg	.78		. 25	.15	. 22	.11				•40	.09	. 20	.01	1.18	.82	.18		· 47 I	.75	.03	.54	+		.00			.04	.06	0.1	.DI		5.63
Danville	.10		.05	.15	. 20				+	. 25	• I 2	. 14	+	. 36	.10	.76		• 47	.46	.01 I	.56	+		.10 .			.42	+	.72 .	.12 .		5.74
Effingham	80		.19	.23	.15	•45				.07		. 32		.35	†			.04	. 04	.20	.75	. IO		+ .				. 25	-75	† .		3.94
Hannibal, Mo	.80	• • • •	.12	• 53	•37	.18				.51	.12	. 23	:	1.33	•45	.38 .		[	.07 I	- 25 .				'			.65 .		·31 .			×.30
Havana	.52	. 04	.05	• 04	.61				+	- 45	.02	.37	+	.73	.44	.30 .		*18 I	.67	.40	•79	Ť		.OI			-77	.06 .		.13 .		7.03
Keokuk, Ia.	.52		†	.04	.46				. 26	·31	+ 1	10.	†	.72	. 20	.20		-44 3	.08	.02	.21	1 1	٠٠.				-23 .		1 .		+	0.70
Loami. Martinsville. Mattoon	.21		†	•31	.16	. 24			†	.10	.07	.25	1	.51	.16	.48		·70 3	.10	.121	.87 .			† .			.21	+	.76 .			6.00
Mattoon	.60		.04	.23	.10	.06			• I2	.17																						
Morrisonville Mt. Pulaski											†	.22	+ (	· 49	.11	. 57 .		· 50 I	.Si 2	.02 1	.30	.04		† :			1.35 .		.70 . .11			9.14
Paris	. 60		.05	.11	· 45	• 58				.03	+	.14	'	.10	22		• • • •	7	+	. 20	.20 .	• • •   • •		+ .			+01	+	. 16.			3.15
Peoria Philo	.32		.03	.20	.20				.08		.22	22		.60	.50	45		.22 [	.00	.65	.74 .	22		.11			. 20 .		.17 .	27 .	. 20	5.54
Rantoul	.26	.03	.01	.11	.20				. 26	+	.14			.41	1.15	.01	1	1.38	.46	† :	.10	+		† .			.04.	• • •	•37	.01 .	1	5.94
SpringfieldTuscola	.16	• • • • •	.02	. 24	.22	.13				.26	.02	.12	10.	.51	.10	.38		.31	.06	.10 1	.98 .						.66	.03	- 39	.05	••••	5.12
Peoria Philo Philo Rantoul Robinson Springfield Tuscola Winehester Averages Southern District.	.75		†	•43	.50	.12			•37	.03	.50		4	.87	.75	. 26 .		.56	·32 ·	† 1	.63		· · .	.01 .	• • • • •		.75	• • •	.62	+::		8.50
Albion Cairo Carlyle Chester	.32	.20	.05	•45	.05	.65	10.			+		.02		+ 1		.23 .				.30 1	.15	.01	:::		.06		.94.	•33 .	.14	+ .		5.36
(Seno				- 10	.92	.09			10.	. 09	.31		.02 .	.68	.05	• • • •		I	.46 1	.05	.35		• •	+ 1.	.	• • • •	.20	.02 1	.16.	• • • •		8.49
('obden	.03	07	.03	.37	.04	. //	.12 .		.03			. 20	.03			.00				.40	· 40	. 02					. 10	.40	. 73 .			2.1.
Equality Friend Grove	†	26	.19	1.23	.24	1.11				.02		.16		.38		.29 .			1	.42	.70	04	• •	+	. 1 2 .			.15 1	.21 .	.02 .		6.15
Friend Grove Goleonda Grayville Greenville Halhdayboro		. 20	.35	1.20	.10	•74 1.25				.08		.35		-53		.07 .		.01	I	.06	.65	.03	• • •	. 18 -	T .		1	.07	.05	*34 .		6.35
Mt. Vernou	.30		.42	.30	.85	.25				.04	.20		.20	.05					.32	.90	. 24 .		٠				.18	·95	.02.			5.52
Olney	.10		.20	.27	•07	1.08			. 04	†	.30 .		.23 .	. 25	.06	+ .			† 2	•43	35						-41	• • •	.781.			7.28
Plum Hill	.48	.03	.25	.56	.21	1.00					.II	.10	+ .						.25	. 21	54	12				•••	.05	• • •	.87 .			5.12
Mascoutali Mt. (armel. Mt. Vernon. New Burnside. Olney	1.43	.10	.01	.50	+	.61				.09	.04 .	.12	.06	.36	1	.10 .		+	.30 1	+ 1	.71				18 .		.58	2	.57 .	+ :		8.55
Averages	.30	.06	.31	.70	.34	.85	.01	.00	+	.03	.01	.04	.11	.01	.01	.07	.00	. OI	. 26 . 17 I	.03	.70	07 .	00		03 .	.00	.35	.26	.96	.02	.00	6.56
Averages for the state	.30	.03	.08	. 28	.37	. 24	+ /	.00	.05	.08	.08	.09	.03	. 44	. 25	. 10	.00	. 29	.64	.51	.70	.05	100	04	+ {	.00	-33	- 14	-53	. 04	.OI.	5.78

### U. S. DEPARTMENT OF AGRICULTURE.

REPORT FOR JUNE, 1898

## ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

# WEATHER BUREAU.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE.

WILLIS L. MOORE

CHIEF OF WEATHER BUREAU

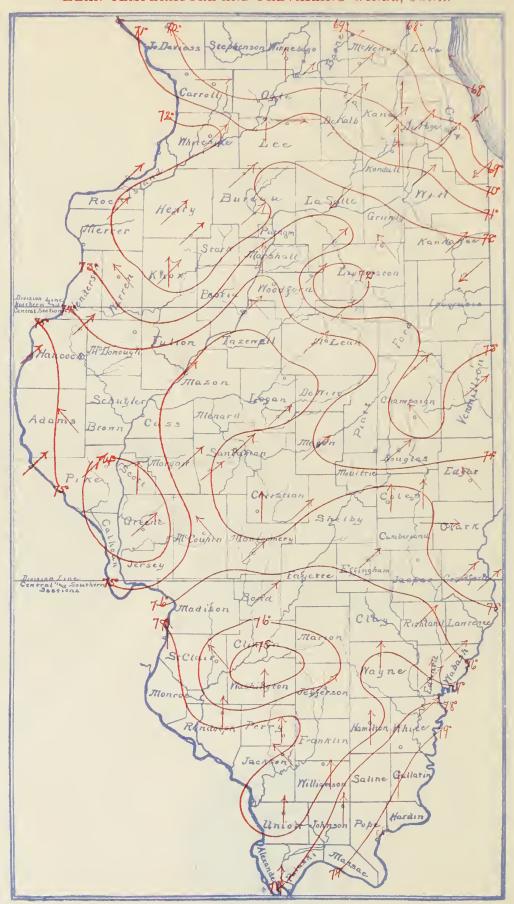
BY

CHARLES E. LINNEY,

SECTION DIRECTOR, CHICAGO, ILL.

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U. S. DEPARTMENT OF AGRICULTURE,

# CLIMATE AND CROP SERVICE

OF THE

### WEATHER BUREAU.

CENTRAL OFFICE: WASHINGTON, D. C.

ILLINOIS SECTION,
CHARLES E. LINNEY, Section Director,
CHICAGO, ILL.

VOL. III.

CHICAGO, ILL.

NO. 6

Solar halos were observed on the 1st, 3d to 5th, 8th, 10th, 13th 14th, 16th, 18th, 22d, 26th and 30th; lunar halos on the 2d, 3d, and 26th.

Additional reports of loss by lightning for the month of May, show further loss of stock aggregating \$137.00, and of 2 dwellings damaged to the extent of \$59.70.

Fog occurred along the Fox River valley on the 2d and 8th, over northwest counties on the 13th, along the Ohio valley on the 3d-4th, and the lower Mississippi (at Tilden) on the 2d, 13th and 18th.

Thunderstorms were general over the state on the 1st, 6th to 19th and 22d to 27th, while two or three were observed in the northern districts on the 29th and 30th. Hail fell during the storms of the 1st, 6th, 7th,9th, 10th, 15th, 18th. and 25th, but over limited areas, hence little damage was done.

There were 42 reports of loss by lightning returned for the month of June. These show that 12 barns, 7 dwellings, 1 school house and 3 churches were struck, causing an aggregate loss of \$1833.00. They also show the loss of 28 head of stock, valued at \$1097.66, an aggregate loss for the month of \$2930.66 as compared with \$2334.70 during May. Again the losses in northern counties were more numerous than in the central or southern. The reports of loss of stock show very clearly the increased danger which stock sustain from the use of the wire fence.

On Thursday and Friday October 20th and 21st, 1898, there will be a convention of Weather Bureau officials at Omaha, Neb. Mr. James Berry, Chief of the Climate and Crop Divison, Washington, under the direction of the Chief of the Weather Bureau, announces that the Commercial Club of that city has tendered the use of its rooms in the Board of Trade Building for the convention, and that several of the hotels have made reduced rates. This, taken in connection with the low railroad, rates, due to the Trans-Mississippi Exposition, causes him to hope for the attendance of 75 or more of the officials of the Bureau. and a largely attended, enthusiastic, successful convention. A

cordial invitation is extended to our Voluntary Observers Crop Reporters and Displaymen to be present at the convention.

The temperature of the month averaged 73.3°, or about 1° daily above normal. The excess was greatest throughout the central district. Rather high temperatures prevailed at the beginning of the month. These continued, with little variation, until the night of the 14th. A second warm period followed from the 23rd to the 25th, and a third closed the month, beginning with the 29th. Temperatures above 90° were commonly observed from the 3rd to the 7th, 23rd to 25th and 29th and 30th, the latter probably averaging slightly higher than any of the other days of the month. The highest recorded was 97° at Bloomington on the 4th and 6th; 96° were observer at a number of stations.

Cool periods prevailed from the night of the 14th to the morning of the 17th, from the 19th to the 22d and from the morning of the 26th to the evening of the 28th. The 15th was probably the coolest day of the month, although low temperatures were recorded on many dates, The lowest observed was 41° at Kishwaukee on the 22th. This gives an extreme range in temperature of but 56°, while the average greatest daily range was 32°.

The rainfall of the month averaged 4.34 inches, which is about 0.35 of an inch above normal. The storms were exceedingly local in character, thus over eight inches fell at Elgin, while but 2.56 fell at Ft. Sheriden, nearly ten inches fell at Cambridge and Galva, while less than three fell at Tiskilwa, and nearly seven inches fell at Effingham, while but a little more than one inch fell at Olney, in each case but a few miles between stations.

The brief rain period of the last of May ended with the first day of June. Rain again set in on the 6th and continued almost daily until the evening of the 17th; a third rain period began on the 21st and ended with the 27th. Sprinkles also fell over the northern district on the 29th. The 9th, 25th and 26th were days of equal rainfall, averaging 0.55 of an inch.

The greatest amount measured during the month was 9.88 inches at Cambridge, closely followed by 9.86 at Galva; the least measured was 1.10 at Olney. The greatest fall in any 24 hours was 6.50 at Cambridge on the 22d-23d. Excessive rains were also reported from many other stations. Three lives were lost in Henry County by drowning, as a result of the heavy rainfall on the 23rd.

There were 10 days with .01 of an inch of rainfall, also 14 clear, 11 partly cloudy and 5 cloudy days during the month. The prevailing wind direction was SW. with an average hourly velocity of 7.9 miles; highest velocity 50 miles from the SW. at Chicago on the 24th. The barometric pressure averaged 29.99 inches; highest 30.32 at Chicago on the 15th; lowest 29.47 at Dubuque on the 25th.

Note.—The mean temperature of Decatur, on page 5, should read 74.0, departure plus 1.1.

#### THE PROGRESS OF THE CROP SEASON.

CHICAGO, JUNE 6, 1898.

The temperature of the past week averaged from 3° above normal in northern counties to 5° and 6° above in central and southern, while rainfall increased from a mere sprinkle in eastern, northern and sonthern counties to slightly more than one inch in west central. The week was a highly favorable one, warm, dry, and just such as was needed to rush the corn planting which was practically finished. Cultivation of earlier fields is general. Wheat is rapidly nearing harvest in southern counties, cutting will begin the last of the week; in central and northern counties it is heading and blooming, rye also. Oats are growing finely, rather too rank on some over-wet soil; grasses are excellent; gardens and potatoes fine, with garden truck plentiful; fruits dropping quite badly.

CHICAGO, JUNE 13, 1898.

The temperature of the past week averaged from 3 to 5 degrees daily above normal, and rainfall from a half inch to more than four inches in north Champaign, the showers being heavy in many central and northern counties. Considerable corn is yet unplanted and much delay has been caused in cultivation so that many fields are weedy, but generally corn is growing rapidly and shows a good stand. The wheat harvest has begun in southern counties and will be general over that district the last of the week, the yield proving fair to good, with good berry. Oats, rye and grasses are generally doing well, although oats are becoming too rank from wet weather. Gardens and potatoes are excellent, and early small fruits plentiful. Clover cutting has begun in southern counties; broomcorn planting continues.

CHICAGO, JUNE 20, 1898.

The temperature of the past week was nearly normal, and rainfall light local showers, except in south central and north southern counties, where heavy showers fell from the 14th, to 17th, delaying cultivation. Wheat and rye harvest is progressing in the southern district and will begin in the central this week, some damage has resulted from rust, smut and bugs. Clover is being cut: oats are heading and making rapid growth, rather too rank on over-wet land, causing rust and lodging, Meadows and pastures continue fine, also gardens and potatoes, and garden truck is plentiful. Corn is rather unevening from replanting but is growing rapidly; fields are being cleaned as fast as the soil will permit. Small fruits continue plentiful and fine.

CHICAGO, JUNE 27, 1898.

The temperature of the past week averaged about normal, and rainfall much more than normal because of very heavy local storms from the 23d to the 26th, causing much damage. Wheat and rye harvest made good progress over the south half of the state, being practically finished over the southern district, with some stacking and threshing done. The results show mostly a fair yield, damage having resulted from chinch bugs, rust and smut. Oats harvest will begin in southern counties this week. Clover cutting is in progress generally, and some timothy has been cut. Corn cultivation has been pushed rapidly and early fields are being laidby; broomcorn planting is finished; gardens and potatoes continue fine.

### OBSERVERS NOTES.

KNOXVILLE.—June was a growing month, most all farm crops did well.

C. N. Butt.

RANTOUL.—The rain on the 8th-9th (2.53 inches) all fell within eight hours.

H. B. Clark.

Lanark.—Haying began on the 20th; most all clover hay made by the end of the month.

M. N. Wertz.

Scales Mound.—The month closed very hot; having has commenced, good crop; corn doing well; fall wheat and rye are ripening fast.

Jos. Vipond.

HAVANA.—Illinois River 13.6 ft above low water on June 1st and 9.6 above on the last day of the month; wheat harvest begun on the 27th.

J. M. Ruggles.

Galva.—On the 23rd very heavy rain fell, doing much damage; nearly all the bridges, large and small, south and west of Galva were washed out.

F. U. White.

Equality.—On the 26th about 5.50 inches of rain fell in one hour 4 miles west of here; wheat standing in shock was washed away bodily and corn a foot high was covered by the washed soil.

L. W. Gordon.

MINONK.—Hail on the 9th did considerable damage to fruit, corn and oats, and broke hundreds of window lights. Corn is being laid by and is doing nicely; oats are ripening early and promise a good crop.

O. M. Davison.

'RILEY.—From 9.15 p.m. of the 24th to 3.45 a.m. of the 25th 4.40 inches of rain fell; much damage was done to fields by washing; grain was lodged and telephones burned out, railroads damaged and trains delayed. John West James.

ELGIN.—On the night of the 24th, after a very sultry day, we were visited with a succession of thunderstorms, with wind and hail, lasting from 10 p.m. until 4 a.m. of the 25th, during which time 5.00 inches of rain fell.

J. S. Dumser.

FRIEND GROVE.—June was a good month for crop growth; wheat harvest was cool and pleasant, considerable wheat damaged by bugs; corn is fairly clean and growing nicely; oats are good, but some damage by bugs; timothy meadows the finest I have ever seen and now being harvested; early potatoes are good; gardens nice.

V. E. Majors.

Barometer and Wind Table.

		Bar	omet	er.		-		Wind		
Stations.						over t.	hour	Maxi	mum citv.	
	Mean.	Highest.	Date.	Lowest.	Date.	Total move-	Average hour ly.	Miles.	Direc- tion.	Date.
Bloomington Cairo Chicago Davenport Dubuque Galva Grayville Hannibal Keokuk Kishwaukee Minonk Olney Oswego Robinson St. Louis Springfield Reynolds Rushville	29.99 29.98 29.99 29.94 29.95 29.99 30.02 29.96 29.98 30.03 30.04 30.01 29.98	30.25 30.14 30.32 30.22 30.28 30.27 30.16 30.18 30.28 30.21 30.20 30.25 30.15 30.14	15 28 15 15 15 15 15 15 15 15 15 15 15 15 15	29, 58 29, 79 29, 49 29, 50 29, 57 29, 56 29, 56 29, 55 29, 74 29, 56 29, 55 29, 72 29, 68 29, 68	25 25 25 25 25 25 25 25 25 25 25 25 25 2	4,644 10,985 4,915 4,818 5,374 4,560 5,514 4,884	6.4 15.3 6.8 6.6 7.5 6.3	40 50 26 28 40 36 37 25	W. sw. sw. sw. sw. sw. se.	12 24 25 25 25 18 26
Averages	29 99	30,22		29.61		5,712	7.9			

#### Climatological data for June, 1998

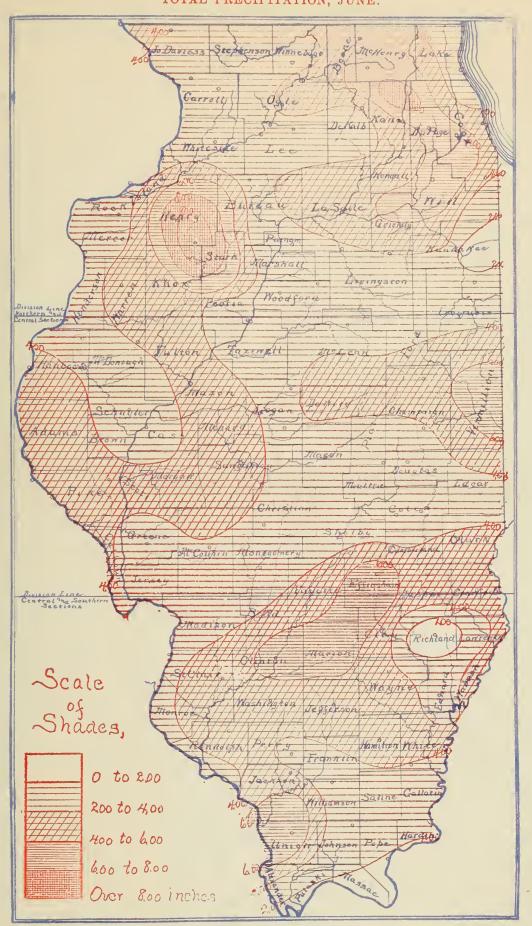
					Clima	tolog	gica	l da	ta fo	or Ju	ine, l	.898								
			rd,	Tem	eratur	e,in d	egre	es Fa	liren	heit.	Pr	ccipitati	on, in	inches			Sky.		ion	
Stations.	Counties.	Elevation feet.	Length of record, years.	Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from normal	Greatest in 24 hours.	Total snowfall unmelted.	Number rainy days.	Number clear days.	Number partly cloudy days.	Number cloudy days.	Prevailing direction wind.	Observer
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Note,—Unless otherwise indicated the highest lowest and mean temperatures are from maximum and minimum thermometers. \*Highest and lowest temperature from observed readings. 1. Mean temperature from 7+2+9+9+4: 2. 8a+8p+2: 3. 7a+7p-2: 4. 6a+6p+2: 5. 7a+2p+2: a. b. c. d. etc. number days missing. @U. S. Weather Bureau Stations. + Same temperature occurred on more than one day. + Trace in precipitation column when amount is less than 0.01 of an inch. All records are used in determining State or district means, but State and district departures are determined by comparison of current data of only such stations as have normals. P artially estimated.

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CHICAGO	2	6					.71	.13	.24	.82	. 03	.22	.33		+	.03					.29					.07					• • • •	5.97
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Henry Hospital	. 1.	4					+	.10	. 24			.18			†						II.		·II									
Joliet	11	3		-			.01		. 43	.01	2.44	.01	.03	• • • • •																		
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Martinton Minonk	†					+	.11	-30	.50		.44	.02	.17		+							+	. IO .	`			.05					2.12
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<sup>†</sup> Trace when procipitation is less than o.o. of an inch. a, b, c, d, etc. number days missing.

L'NIVERSITY OF ILLINOIS.

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### U. S. DEPARTMENT OF AGRICULTURE.

REPORT FOR JULY, 1898.

## ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

# WEATHER BUREAU.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE.

UNDER DIRECTION OF

WILLIS L. MOORE

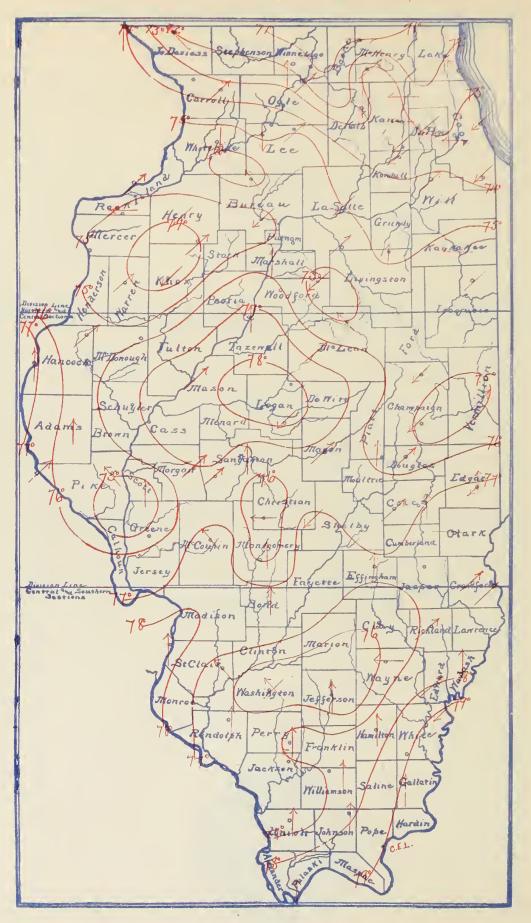
CHIEF OF WEATHER BUREAU

BY

CHARLES E. LINNEY,

SECTION DIRECTOR, CHICAGO, ILL.





U S. DEPARTMENT OF AGRICULTURE.

# CLIMATE AND CROP SERVICE

### WEATHER BUREAU.

CENTRAL OFFICE: WASHINGTON, D. C.

### ILLINOIS SECTION,

CHARLES E. LINNEY, Section Director,

CHICAGO, ILL.

VOL. III.

CHICAGO, ILL.

NO. 7.

The 2nd was the warmest day of the month, with an average temperature of 82.5°.

Solar halos were observed at a few stations on the 7th, 11th, 13th, 14th and 31st; lunar halos on the 27th, 30th and 31st.

The 10th day averaged the lowest of the month, just reaching 66°; the morning of the 11th, however, gave the lowest minimum readings.

Fog occurred in the northern district on the 8th and 21st; also along the Mississippi valley on the 23d, 26th and 30th. The Ohio valley also had fog on the 26th and 27th.

Additional reports of loss by lightning for the month of May, show further loss of stock aggregating \$20.00, and damage to a dwelling house to the amount of \$4.70. This makes the aggregate loss for the month of May \$2359.40.

Seven additional reports of loss by lighting for the month of June, show a further loss of stock aggregating \$70.00, and of damage to dwellings and barns of \$176.00. This makes a total loss of \$3,176.66 for June, given in 49 reports.

Thunderstorms were general over the state on the 3d, 8th, 17th to 19th, and 24th to 30th, while scattered storms occurred on the 2d, 4th, 7th, 13th, 16th, 20th, 21st and 31st. Hail fell at a few stations on the 19th, 25th, and 27th to 29th.

There were 31 reports of loss by lightning returned for the month of July. These show that 15 barns, 7 dwellings, 1 milk house, 1 railroad depot and 1 police station were struck, causing an aggregate loss, with contents, of \$11,052.50. They also show the loss of 25 head of stock, valued at \$942.00, and of hay in the stack valued at \$271.30, an aggregate loss for the month of \$12,265.80. This far exceeds the loss in either May or June, and is due to the total destruction of a number of large barns, with contents. The increased danger which barns are supposed to sustain from the storage of hay and grain, seems to re-laccords somewhat with the dryness of the month.

ceive some verification from the reports of the month. Most of the stock killed were in the vicinity of wire fences.

The temperature of the month averaged 75.5°, which is practically the normal temperature. The highest recorded was 102° at Alexander on the 24th, closely followed by 101° at Martinton and Mt. Pulaski on the same day. The lowest recorded was 41° at Lanark on the 11th, the day of the lowest temperature generally. This gives a range of 61°, while the average greatest daily range was 33°.

There were but three periods which were much below the general average for the month. The first came on the evening of the 3rd and ended on the 5th; the second came on the 9th and ended on the 13th, and the third closed the month, beginning on the 29th.

The warm weather on hand at the beginning of the month continued until the 3rd, high temperatures being general. A second period of warmth set in on the 6th and continued until the evening of the 8th; a third period began on the 14th and continued, with slight interruption, until the 28th. Temperatures above 100° were recorded at many stations, and over some of the drier central counties the temperature exceeded 90° during one-half of the month.

The precipitation of the month averaged 2.93 inches, which is about 0.82 of an inch below the normal. The north half of the state had a very dry month, a considerable area receiving less than an inch of rainfall, and a few stations less than a half inch. Marked increase occurred over the south half, reaching more than six inches over a considerable area in the southern district.

Five very poorly marked rain periods can probably be discerned; the first on the 2d to 4th; second on the 7th-8th; third 14th to 20th; fourth on the 24th-25th, and last 27th to 31st, although only 7 days were really days of general rainfall, and even then the showers were very local in character.

The greatest amount measured within the state was 7.52 at St. John, closely followed by 7.44 at St. Louis, and 7.35 at Cobden; the least was 0.29 at Dwight. The greatest amount in any 24 hours was 5.08 at St. Louis on the 7th-8th. Rainfalls exceeding 2.50 inches in 24 hours are also reported from Cairo, Cobden, Friend Grove, Hallidayboro, and Mt. Vernon.

There were 7 days with 0.01 of an inch or more rainfall, also 18 clear, 9 partly cloudy and 4 cloudy days during the month. The percentage of sunshine throughout the northern district was very large, there were but 2 cloudy days and only 9 partly cloudy; many stations did not have a cloudy

The prevailing wind direction for the month was S, although SW. and NE. also appear many times in the columns. The average hourly velocity was 7.5 miles; highest velocity 48 from the N. at Chicago on the 19th. The barometric pressure averaged 30.03 inches; highest 30.31 at Chicago on the 12th; lowest 29.66 at Dubuque on the 19th. The average was high for a summer month, and

#### THE PROGRESS OF THE CROP SEASON.

Chicago, July 4, 1898.

The temperature of the past week averaged from 1% above normal in extreme north to 4% above over the remainder of the state: rainfall was almost lacking, only light scattered showers being reported. It was a highly favorable week, both for farm work and the growth of crops. Wheat and rye harvest is practically finished in the south half and in progress over the north half; the wheat yield is disappointing throughout central counties, and averages poor to fair. Out harvest is well under way over southern counties, with good yield. Clover cutting continues over the northern district, the yield everywhere is good. Timothy haying is progressing favorable and large returns are common. Corn cultivation made rapid strides and early fields are generally laid-by, with late ones clean and all growing rapidly. Chinch bugs are causing some damage in central counties to fields near wheat stubble.

### CHICAGO, JULY 11, 1898.

The temperature of the past week averaged from 2° to 3° daily below normal, and rainfall from light sprinkles over northern and central counties to more than five inches in the west part of the southern district; generally rain would help corn and pastures. Work has made rapid progress. Wheat and rye are harvested and considerable threshing has been done; the wheat yield proves poor to fair in all central counties. Oat harvest is well begun in the south half of the state, with only fair yield, owing to damage by rust and chinch bugs. Haying is well along and a large crop of fine hay has been made. Corn is growing very fast and early fields show tassel; chinch bugs are causing some damage near wheat fields. Small fruits are abundant.

### CHICAGO, JULY 18, 1898.

The past week was very favorable for haying, harvesting and threshing. The temperature averaged from normal in northeast counties to about 5° below in southern. Little rain fell, except in McLean, north Champaign and extreme southern counties, where good local showers are reported; rain is generally needed. The sunshine was abundant. Winter and spring wheat, rye, barley and oats are in the shock or stack, excepting oats in the northern district, where harvest is in progress. Considerable threshing has been done and in northern and southern counties the wheat yield is fair to good, but poor to fair in central. Oats are showing much damage from chinch bugs and rust, and but fair yields are reported. An abundant crop of hay has been well saved. Corn is doing well, but is needing rain, along with broomcorn, late gardens, late potatoes, pastures and fruits.

### CHICAGO, JULY 25, 1898.

The temperature during the past week averaged from 2° above in northern counties to 4° above in southern. Rainfall was heavy along the north border, but diminished rapidly to light sprinkles over central and southern counties. Rain is generally needed for corn, late potatoes, gardens, broomcorn and pastures. The week was highly favorable for farm work, which made great progress. Harvesting is finished and threshing well along in the south half of the state and begun in the north. Haying is finished and a large crop of excellent hay has been made. Corn continues to make fair growth, although dryness is injuring it in central countries and chinch bugs are also causing damage. Early fields show roasting ears in southern counties, late fields are beginning to tassel. Stubble plowing is progressing.

#### OBSERVERS NOTES.

RANTOUL.—One inch of rain fell in 40 m. on the morning of the 17th.

H. B. Clark.

Wheaton.—July will go on record as a month without a cloudy day.

Wm. H. Johnson.

HAVANA.—Illinois River was 9.5 ft. above low water on the 1st and 2.6 ft. above on the last day of the month.

J. M. Ruggles.

Robinson.—Heavy thunderstorm on the 29th; lightning struck our lighting plant and left us in darkness; no one hurt.

A. P. Woodworth.

LAGRANGE.—Heavy thunderstorm, with large hail, on the evening of the 28th. Hail fell measuring one and one-half inches in diameter.

F. E. Sanford.

Sycamore.—A hail storm, said to have been very destructive to crops, passed six miles east of this station on the 28th; only a little rain fell here. Roswell Dow.

STREATOR.—Heavy showers, with lightning, occurred on the 25th a few miles north of Streator. A barn at Grand Ridge (8 miles north) was burned. R. Williams.

HILLSBORO.—On the 25th we had 1.19 inches of rainfall in 1. h. 13 m. A small tornado was reported 8 miles north. Its course was reported to be from N. to SW.; width of path 15 to 20 ft., slight damage.

P. J. Edwards.

ELGIN.—A very violent thunderstorm occurred during the evening of the 19th, with some symptoms of a tornado. On the 28th a heavy thunderstorm, with hail, passed just south of the city. The month has been remarkable for its great number of clear days and small amount of rainfall.

J. S. Dumser.

KNOXVILLE.—July was a fine month for all kinds of farm work. A large crop of hay was put up in good condition. All kinds of grain are now in stack or threshed, grain of fair quality, but not large yield. Corn, pastures and late potatoes are needing rain. Two houses and a barn were destroyed by lightning during the month.

C. N. Butt.

### Barometer and Wind Table.

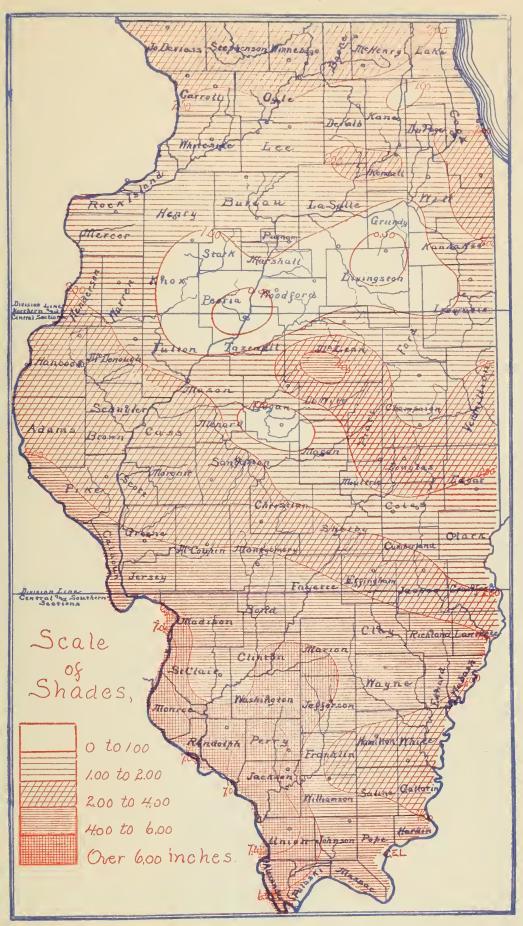
		Baro	omet	er.				Wind		
Ptotiona						ve.	our-	Max	imum city.	
Stations.	Mean.	Highest.	Date.	Lowest.	Date.	Total move- ment.	Average hourly.	Miles.	Direc- tion.	Date.
Bloomington Cairo Chicago, Davenport Dubuque Galva Grayville Ilannibal Keokuk Kishwaukee Minonk Olney Oswego Robinson St. Louis	29.99 30.01 30.02 29.99 30.00 30.05 30.02 30.05 30.01 30.03 30.02 30.06 30.09 30.03	30.26 30.16 30.31 30.25 30.26 30.27 30.26 30.25 30.24 30.24 30.25 30.30 30.16	12 12 12 12 12 12 12 12 12 12 11 12 12 1	29.70 29.83 29.71 29.67 29.66 29.78 29.82 29.83 29.73 29.76 29.80 29.85 29.88 29.79	27 27 27 19 19 19 27 19 27 27 27 27 28 28	5,126 9,827 4,578 4,225 5,324 4,321	6.9 13.2 6.2 5.7 7.2 5.8	38 48 38 56 	n. n. nw. nw. w. w.	29 19 27 19 28 28
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Climatological data for July, 1898.    Precipitation, in inches.   Sky.   5																				
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Stations.	Counties.	Elevation feet.	Length of record, years.	Mean.	Departure from the normal.	Highest.	Date.	Lowest.		Greatest daily range.	Total.	Departure from normal	Greatest in 24 hours.	Total snowfall unmelted.	Number rainy days.	Number clear days.	Number partly cloudy days.	Number cloudy days.	Prevailing direction wind.	Obscryer.
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Note,—Unless otherwise indicated the highest, lowest and mean temperatures are from maximum and minimum thermometers, \*Highest and lowest temperature from observed readings. 1. Mean temperature from 7+2+9+9+4: 2. 8+8p+2: 3. 7+2p+2: 4. 6+4p+2: 5. 7+2p+2: 5. 7+2p+2: 5. 7+2p+2: 6. 7+2p+2: 6. 7+2p+2: 6. 7+2p+2: 7. 7+2p+2: 8. 7+2p+2: 8. 7+2p+2: 8. 7+2p+2: 8. 7+2p+2: 9. 7+2p+2: 8. 7+2p+2: 9. 7+2p+2:

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### Daily precipitation for July, 1898.

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airo airo arlyle Chester Sisne Obden Quality Friend Grove Frayville Freenville Iallidayboro GLeansboro Fascoutah Gt. Carmel Gt. Vernon Gew Burnside Jlum Hill Gt. John			.20 .02 .13 .38  .01 .03  .86 .05 †	.12 .56 .82 .56 .15 .444 .43 .36 .33 .03 .30 .28			.28 .03  † 1.24 1.43 .18 1.10 † .42 .10 †	1.78 .33 .67 .35 .92 2.13 1.29 .77 .31 2.45 .14 .37 .60 2.43	†				.02	.12 .08	, o6 †	.03 .02  .13 † .01 .30 .03 † .23	.08 .36 .04 † .08 .95 	† † †  † †	.02	.07				† .25  † †	3·20 ·46 ·14 ·72 ·45 ·15 ·1.25 ·38 ·52 ·1.45	.02	+	2.11 .04 + .34 .95 .37 + .50 .56 .46 .40	1.08 .23 + .06 1.10 .12 .79 1.20 .08 1.18 .26	.14 .39 1.67 1.57 1.50 .10 .88 .05  2.08 1.07	-54 + .01 .03 .26 .1.54 + +	6.28 2.94 4.37 7.12 3.57 4.84 3.57 6.43 5.82 4.76 6.02
airo airol arlyle Chester Sisne Obden Guality Friend Grove Grayville Freenville Iallidayboro GLeansboro Hascoutah Gt. C'armel Gt. Vernon Gw Burnside			.20 .02 .13 .38  .01 .03  .86 .05 †	.12 .56 .82 .56 .15 .444 .43 .36 .33 .03 .30 .28			.28 .03  † 1.24 1.43 .18 1.10 † .42 .10 †	1.78 .33 .67 .35 .92 2.13 1.29 .77 .31 2.45 .14 .37 .60 2.43	†				.02	.12 .08	, o6 †	.03 .02  .13 † .01 .30 .03 † .23	.08 .36 .04 † .08 .95 	† † †  † †	.02	.07				† .25  † †	3·20 ·46 ·14 ·72 ·45 ·15 ·1.25 ·38 ·52 ·1.45	.02	+	2.11 .04 + .34 .95 .37 + .50 .56 .46 .40	1.08 .23 + .06 1.10 .12 .79 1.20 .08 1.18 .26	.14 .39 1.67 1.57 1.50 .10 .88 .05  2.08 1.07	-54 + .01 .03 .26 .1.54 + +	6.28 2.94 4.37 7.12 3.57 4.84 3.57 6.43 5.82 4.76

<sup>†</sup> Trace when procipitation is less than o.or of an inch.

a, b, c, d, etc. number days missing.

### U. S. DEPARTMENT OF AGRICULTURE.

REPORT FOR AUGUST, 1898.

## ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

# WEATHER BUREAU.

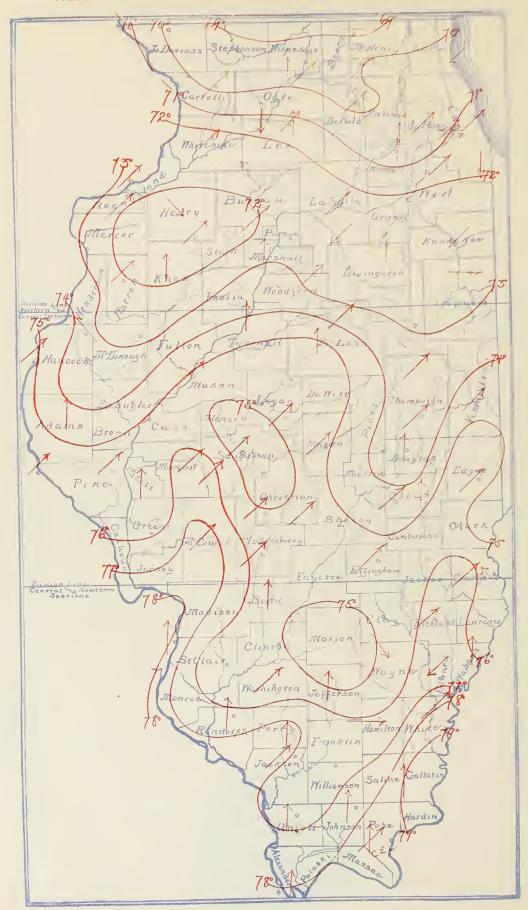
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WILLIS L. MOORE

BY

CHARLES E. LINNEY, SECTION DIRECTOR, CHICAGO, ILL.





U. S. DEPARTMENT OF AGRICULTURE,

# CLIMATE AND CROP SERVICE

OF THE

### WEATHER BUREAU.

CENTRAL OFFICE: WASHINGTON, D. C.

### ILLINOIS SECTION, CHARLES E. LINNEY, Section Director, CHICAGO, ILL.

VOL. III.

CHICAGO, ILL.

NO. 8.

Lunar halos were observed on the 4th and 5th; solar halos on the 2d, 5th, 6th, 7th, 8th, 14th, 16th, 17th, 24th and 25th.

An additional report of loss by lightning in May, gives the loss of a yearling heifer valued at \$15.00. An additional report of loss in June shows damage done to a church to the extent of \$14.00.

Fog occurred quite commonly on the morning of the 22d, also at individual stations on many other dates. Along the Ohio River and Wabash valley, the 9th, 10th, 26th and 28th were days when fogs were general.

Forty-seven reports of loss by lightning, received for the month of August, show an aggregate loss of \$21,723.46, divided as follows: 117 head of stock \$3,138.16; 29 buildings, with contents, \$18,343.30; oat and hay stacks \$242.00.

Thunderstorms prevailed over the state each day in the month except the 4th to 6th, 9th. 10th, 12th, 22d, 28th, and 30th; those of the 3d, 7th, 8th, 15th to 17th and 23-24th, were most general and severe. Hail fell at a few stations on the 14th, 15th, 16th and 26th.

Six additional reports of loss by lightning during July have been received; these show the burning of a barn valued at \$150; damage to a house to the extent of \$3.50, and the killing of four head of stock valued at \$142.00. This gives an aggregate loss for July of \$12,269.30, given in 37 reports.

It has become necessary to change the dates of the Omaha Weather Convention from October 20th-21st to Wednesday and Thursday, October 12th-13th. Persons connected with the Illinois Section, either as crop reporters, voluntary observers or displaymen, who contemplate going, and we hope there are many, should bear in mind this change of dates, and try if possible to arrange their affairs accordingly.

There were many reports of excessive precipitation, among the heaviest of which are, Cambridge 5.15 in. on the 15th-16th; Dixon 4.21 in. of the same dates; Galva 4.64 in. by

8.30 a. m. of the 16th; Elgin 1.82 in. in one hour on the 3rd; Knoxville 5.40 in. on the 16th from 2.30 to 10.00 a.m.; Monmouth 4.90 in. on the 15th-16th; Kishwankee 4.11 in. on the 15th; Reynolds 5.45 in. mostly on the 16th from 1 a. m. to 7 a. m. Winnebago 3.50 inches in 4 hours on the 15th; LaHarpe 5.45 in. on the 14th.

The average temperature of the month was 73.8° which is but 0.3° of a degree above the normal. The highest recorded was 100° at Martinsville on the 22d and at New Burnside on the 24th; lowest recorded was 45° at Kishwaukee on the 13th and at Lanark and Scales Mound on the 12th. This gives an extreme range in temperature of 55°, while the average of the greatest daily range was 30°.

Only two short periods of cool weather occurred during the month, the first began on the morning of the 3rd and ended with the 6th, the second began on the morning of the 12th and ended the evening of the 14th.

Likewise but two heat periods of special significance occurred; the first began on the the morning of the 21st and ended on the evening of the 25th (in the central and southern districts it continued until the 26th and 27th respectively), and the second began on the 29th, from which day the temperature increased steadily to the end of the month.

The precipitation averaged 4.41 inches, which is about 1.69 inches above the normal, as determined from the average of the many stations on the fifth page. A great range is noticable, thus less than an inch of rain fell at St. Louis and more than ten inches at LaHarpe and Knoxville. Nearby stations had widely different amounts owing to the local character of the storms. The storms of the 15-16th, however, covered a large area, the entire northern district feeling the effect of the storms. More than 3.00 inches of rain fell over the district on the two days, doing great damage to growing crops, plowed lands, shocked and stacked grain, and farming interests generally.

Four rain periods passed over the state during the month. The first began on the first day and ended on the 3rd: the second began on the 6th and ended on the evening of the 8th; the third began on the 13th and ended the 18th, and the fourth began on the 20th and ended on the 26th. The 16th gave the greatest average fall over the state as a whole.

There were 8 days with 0.01 of an inch or more rainfall, also 16 clear, 10 partly cloudy and 5 cloudy days. The prevailing wind direction was SW, with an average hourly velocity of 7.3 miles; highest velocity 72 miles per hour from the SW, at Chicago on the morning of the 16th. The average barometric pressure was 29.99 inches; highest 30.24 inches at Oswego on the 13th; lowest 29.69 inches at Dubuque on the 22d.

Note—The mean temperature of LaGrange on page 5, should read 70.3 departure plus 0.2; St. John mean temperature 77.0, minus 0.8; Danville 75.0, plus 2.0, greatest daily range 30; Winnebago 69.6, minus 0.9.

#### THE PROGRESS OF THE CROP SEASON.

Chicago, August 1, 1898.

The temperature of the past week averaged nearly normal, the first half was clear, hot and dry. last half cool, cloudy and showery. Good heavy showers fell over the south half of the state but more rain is needed in the north half for growing crops. Corn generally has received much benefit from the rains and is doing well. A good crop is now assured in the southern district, in northeast counties and along the north tier, but much permanent injury has resulted from the dryness and chinch bugs in central counties and there the crop will be short. Wheat, rye and oat threshing continues. Stubble plowing made good progress, the soil working well. Pastures, second crop clover, millet, buckwheat, broomcorn, late gardens and late potatoes were much benefited by the rains.

### Chicago, August 8, 1898.

The past week was cool, partly cloudy and amply wet, showers having fallen both at its beginning and ending. The temperature averaged from 2° to 5° below normal, the deficiency being greatest in western counties. Crops made excellent growth, corn, especially, being greatly benefited. In all but the former very dry central counties it has practically recovered from lack of moisture. Early fields are filled with roasting ears and late fields are growing rapidly. Threshing was delayed by the showers but plowing made good progress. Pastures are again good; second crop clover premises a large seed yield. Broomcorn, buckwheat, Hungarian, millet, stock peas, beans, gardens, late potatoes and turnips are growing well. Peaches and pears are plentiful; apples a failure.

### CHICAGO, AUGUST 15, 1898.

The temperature of the past week averaged from 2° to 4° daily below normal, the nights being very cool. Heavy local showers fell at the beginning and ending of the week in the sonthern district, elsewhere the rainfall was mostly light. Corn continues its good growth and early fields are everywhere filled with roasting ears, some very early ones are denting; it will be safe from frost from the 1st to 10th of Sept. Late fields are tasseling and earing well, and will be safe from frost by the 20th of Sept. to the 1st of Oct. Broomcorn cutting has begun, with fair to good yield. Plowing made good progress, but threshing was delayed. Pastures, second crop clover, millet, buckwheat, sorghum, stock peas, late potatoes, late gardens and melons are generally doing well.

### CHICAGO, AUGUST 22, 1898.

The temperature of the past week averaged nearly normal, although the humidity caused the heat to be much felt. The rainfall was very light over the south half of the state, but increased to more than six inches in the north half, northwest counties having a flood. Corn is generally doing remarkably well, early fields are approaching maturity and ears are denting and hardening, late fields are earing well. Plowing and threshing continue, rather slowly over the north half, but in southern counties plowing is well advanced and early fall seeding is promised, with large acreage. Late crops are doing well; broomcorn cutting is general, with good yield, and clover cutting will begin this week. With the exception of apples, fruits are plentiful, also melons.

### Chicago, August 29, 1898.

The past week was generally clear, warm and dry, although good showers fell over west and north counties;

temperature averaged from 1 to 6 daily above normal, central and southern counties having rather a hot week. Corn made excellent progress and early fields are ripening fast, while late ones are earing well. Some very early fields are about ready to cut. Plowing made rapid advancement and fields are mostly ready for early seeding, which will begin this week. Threshing continues slowly, delayed by wet stacks. Clover cutting has begun, also millet, sorghum and stock peas, with good yields generally: broomcorn cutting continues. Fall pastures, late gardens, late potatoes and turnips are doing well, pastures being exceptionally good.

#### OBSERVER'S NOTES.

RAUM.—A remarkably dry month. Daniel Lawrence.

LaHarpe.—The most severe electrical storm for years occurred on the 14th.

John S. Campbell.

Scales Mound.—On the 15th from 3 to 6 a.m. we had the most severe thunderstorm ever known here.

Joseph Vipond.

HAVANA-—Illinois River was 2.6 ft. above low water mark on the 1st, 5.5 on the 19th and 3.8 on the 31st.

J. M. Ruggles.

Dixox.—On the night of the 15th-16th three inches of rain fell and much damage was done to stock and buildings.

Eustace Shaw.

Elgin.—Unusually large precipitation fell during August, and plant life shows uncommon freshness and vigor for this season of the year.

J. S. Dumser.

NEW BURNSIDE.—There were but two days during the month when the wind was not in the south, and on these days it was in the north.

Geo. Harris.

Sycamore.—Thunder rolled for 12 hours on the 15th, with 2.76 inches of rainfall and high wind, prostrating corn: it was otherwise destructive.

Reswell Dow.

Minonk.—At the close of the month corn looks well, and without an early frost will be a good crop. Fall plowing is being done, but rain is needed.

O. M. Davison.

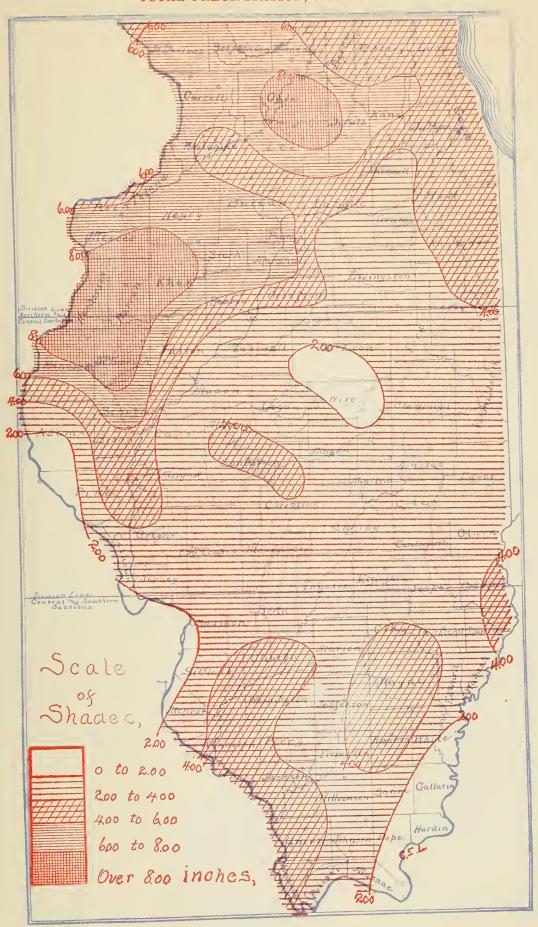
#### Barometer and Wind Table.

		Baro	met	er.		Wind.									
Stations.						-9A	iour-	Maxi	mum citv.	velo-					
Stations.	Mean.	Highest.	Date.	Lowest.	Date.	Total move- ment.	Average hour-	Miles.	Dhree- tion.	Date.					
Bloomington Cairo Chicago, Davenport Dubuque Galva Grayville Hannibal Keokuk Kisliwaukee Minonk Olney Oswego Robinson St. Louis Springfield	29.99 29.98 29.94 29.95 29.97 30.00 29.97 29.96 29.99 39.98 30.03 30.04	30.19 30.19 30.17 30.13 30.15 30.16 30.15 30.18 30.18 30.12 30.18 30.12 30.18 30.17	4 14 13 5 13 5 13 5 13 5 13 5 13 5 13 5	29.72 29.87 29.72 29.73 29.59 29.80 29.84 29.83 29.83 29.82 29.85 29.85 29.88	22 9 23 22 22 22 22 23 23 22 12 23 3 22 23 	3,525 10,876 4,360 4,300 5,543 4,555 5,240 4,347	7.4 6.1 7.0 5.8	36 72 30 27 25 20	nw. sw. nw. n. ss. sw.	24 16 23 15 					

#### Climatological data for August, 1898.

Climatological data for August, 1998.																				
			ord,	Temp	erature	in de,	gree	s Fahi	enhe	eit.	Pre	eipitati	on, in	inches			Sky.		tion	
Stations.	Counties.	Elevation feet.	Length of reco	Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	range.	Total.	Departure from normal	Greatest in 24 hours.	Total snowfall unmelted.	Number rainy days.	Number clear days.	Number partly cloudy days.	Number cloudy days.	Prevailing direction wind.	Observer.
NORTHERN DISTRICT.  Ashton	McHenry. COOK Scott. Lee Dubuque. Livingston Kane Lake Henry. Marshall Will Winnebago Knox Cook Carroll. Iroquois. Woodford Warren Kendall. *1 LaSalle Rock Island. McHenry Winnebago. Whiteside. Kane. Jo Daviess. LaSalle De Kalb Bureau Bureau DuPage. *3. Winnebago. Carroll.	956 763 715 700 900 626 855 798 717 769 900	17 3 6 3 10	68.8	-0.2 +1.3 -1.0 -1.1 +0.7 +0.2 -0.3 +0.6  +0.9 -0.3 +1.4 +0.6 -1.3 +0.1 -0.9 -0.4 +1.3 +0.1 -0.9 -0.1 +1.9 -0.3 +1.1 -0.7 +0.6 -1.3 +0.6 -1.0 -0.0 -0.0 -0.0 -0.0 -0.0 -0.0 -0.0	93 90 92 93 93 94 92	22† 23 23 23 23 23 22 30 23 22 30 23 22 31 31 23 23 22 23 23 22 23 23 22 23 23 23 22 23 23	49 55 55 55 55 56 57 57 58 59 45 50 45 50 45 50 45 50 45 50 45 50 45 50 45 50 45 50 45 50 45 50 45 50 45 50 45 50 45 50 45 50 45 50 50 45 50 50 50 50 50 50 50 50 50 50 50 50 50	13 44 113 119 112 113 14 113 113 113 113 113 113 113 113	35 24 25 29 35 29 34 30 32 30 34	8.61 4.63 6.57 5.00 3.03 4.90 6.39 4.37 3.35 5.40 8.03 10.18 4.59 7.23 4.70 9.23 4.70 9.23 4.70 9.23 5.61 5.61 5.72 7.72 6.97 5.51 5.72 7.73 7.74	+4.72 +1.29 +3.40 +2.81 +0.08 +1.45 +4.40 +1.28 +1.37 +0.41 +3.92 +4.56 +3.73 +5.91 +1.50 +2.41 +4.54 +4.54 +4.59 +4.54 +4.54 +4.55 +4.54 +4.54 +4.55 +4.55 +2.14 +4.55 +2.14 +4.55 +2.14 +4.55 +3.73 +4.55 +2.14 +4.55 +3.73 +4.55 +5.55 +4.55 +5.55	1.95 5.15 2.33 0.89 2.24 4.21 2.46 1.37 2.05 6.75 4.04 4.11 5.45 2.07 3.45 2.07 3.45 2.07 3.45 2.07 3.45 2.07 3.45 2.07 3.45 2.07 3.45 2.07 3.45 2.07 3.45 2.07 3.45 2.07 3.45 2.07 3.45 2.07 3.45 2.01 5.45 2		10 9 10	18 13 19 15	10 9 21 8 9 6 2 11 16 13  2 7 9 9 9 17 13 22 13 22 13 22 13 23 24 16 16 16 16 16 16 16 16 16 16	4 4 3 4 3	S. S. W. S. W. S. W. S. W. S. W. S.	Ira R. George. Dr. M. M. Robbins. S. B. Randall. Jos. Kuhles. Gentral Office. Julius M. Sherier. Enstace Shaw. E. H. Bowie.  Prof. G. W. Horton. J. S. Dumser. Post Surgeon U. S. A. Prof. F. U. White. Dr. Frederick A. Powell. F. M. Muhlig. Geo. Stevens. C. N. Butt. Prof. F. E. Sanford M. N. Wertz. Francis A. Moore. O. M. Davison. D. J. Strang. J. S. Seely. Dr. J. O. Harris. Thos. C. Lewis. John West James. Hosmer C. Porter. R. A. Hawley. S. L. Adaus. Joseph Vipond. R. Williams. Roswell Dow. W. I. Greeley. O. C. Nussle. Wm. H. Johnson. Frank Osborn. Robert McGrath.
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Daily p	recipitation	for Aug	ust. 1898.
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Mlnonk		.77					.50						.05		.77	2.00	+	+		†	. 28					.39		+				4.70
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Round Grove		.31	.69				.12						*18		2.18	3.45							.13	. 78		.18						5.61
Scales Mound Streator		. 20	.05	.12			. 26							.01	+	1.57					.25		.63	0 50								7.72 2.96
Sycamore		.48	1.59			.14	.61						. 18	.04	.03	4.06				.03	.50			.50		. 21						6.47
Walnut Wheaton	••••	•45	.21			+	.02						.42	. 36	.01	3.74				•13				'		.17		1				5.51 5.69
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Alexander		-84	.02					-48					† †					†			+			1.06	.03	+	.10					3-17
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Danville Decatur			1.02				.22						.04			.01	.25	.06					+	1.13		.25				.13		3.89
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Havana		.68	.07				.05							.60		.25	.46	+						+		.60				†		2.78
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### U. S. DEPARTMENT OF AGRICULTURE.

REPORT FOR SEPTEMBER, 1898.

### ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

### WEATHER BUREAU.

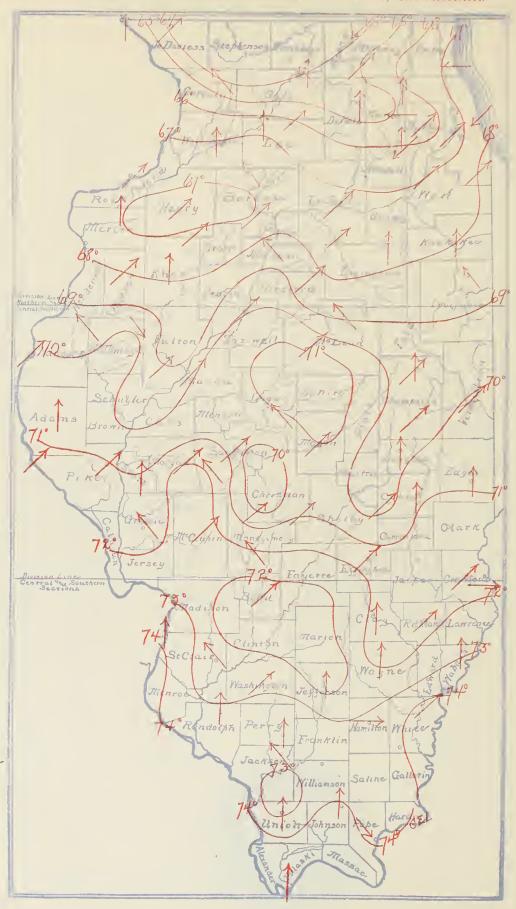
PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE.

WILLIS L. MOORE

-LY

CHARLES E. LINNEY, SECTION DIRECTOR, CHICAGO, ILL.





U. S. DEPARTMENT OF AGRICULTURE.

### CLIMATE AND CROP SERVICE

OF THE

### WEATHER BUREAU.

CENTRAL OFFICE: WASHINGTON, D. C.

#### ILLINOIS SECTION.

CHARLES E. LINNEY, Section Director, CHICAGO, ILL.

VOL. III.

CHICAGO, ILL.

NO. 9.

Smoky, hazy air was general on the 19th to 21st.

A meteor was seen by the Observer at Chemung on the night of the 23d.

Wild ducks were first observed at Lanark returning from the north, on the 22d.

The highest temperature during the month, 99°, occurred at New Burnside on the 2d.

An auroral display was quite generally observed over the northern districts on the 2d.

The lowest temperature recorded during the month was 33° at Kishwaukee on the 12th.

Solar halos were observed on the 3d, 6th, 9th, 10th, 12th, 15th and 21st; lunar halos on the 26th and 29th.

One additional report of loss by lightning during June estimates damage to a church to the extent of \$300.00.

Fog prevailed over the state on the 15th to 17th, 19th, 20th, 23d and 26th; also at individual stations on other dates.

Two additional reports of loss by lightning during August show damage done to dwellings to the amount of \$24.00.

Three additional reports of loss by lightning in May show damage to dwellings to the amount of \$23.00, and to a hay barn to the extent of \$10.00.

New stations which appears this month are Astoria, Bush- 29.62 at Chicago on the 22d.

nell and Flora; the last two being the establishment of the stations at Bushnell and Louisville respectively.

Thunderstorms prevailed over the state on the 3d to 6th, 8th, 12th to 17th, 21st to 25th, and 29th, and 30th. Hail also fell at a few stations with the storms of the 4th, 5th, 6th, 15th and 25th.

Only ten reports of loss by lightning have thus far been received for September. These show the loss of or damage to dwellings and barns to the amount of \$1870.00, and of four head of stock valued at \$148.00, an aggregate loss of \$2018.00.

The temperature of the month averaged 69.3° which is about 2.3° above the monthly normal. There was but one period of warmth during the month, which came from the 1st to the 5th. Temperatures above 90° were rare during any other part of the month, although the last week averaged quite a little above the normal.

Only one very marked cool period also occurred, which followed in the wake of the heat period, and continued until the evening of the 12th, light frost being quite commonly reported on the 8th, 11th and 12th.

The highest temperature observed was 99° at New Burnside on the 2d; lowest 33° at Kishwaukee on the 12th. This gives an extreme range in temperature of 66°, while the average of the greatest daily range was 32°. The 2d was generally the warmest day of the month and the 8th the coldest.

The precipitation came in three well marked rain periods, the first from the 4th to the 6th; the second from the evening of the 12th to the 17th, and the third from the 21st to the 25th; a fourth rain period was just beginning at the close of the month. The average for the state was very large for September reaching 4.74 inches, which is about 1.34 inches above the normal. The central district reached the large average of 5.86 inches and one station, Robinson, touched 10.09 inches, which was the greatest fall during the month; the least was 2.16 inches at Riley.

The greatest rainfall in any 24 hours occurred at Robinson, where 5.10 inches fell. This remarkable fall seems to have been from a storm which was almost local, although 3.39 inches fell a few miles southeast at Palestine.

The rainfall of the month came in general and heavy showers, and thunderstorms were not very numerous.

There were 9 days with .01 or more of rainfall; also 15 clear, 9 partly cloudy and 6 cloudy days. The prevailing wind direction was S W. with an average hourly velocity of 8.5 miles; highest velocity, 41 miles from the E. at Chicago on the 22d.

The barometric pressure averaged 30.01 inches, which is slightly high for an early autumn month. The highest pressure observed was 30.58 at Dubuque on the 10th; lowest 29.62 at Chicago on the 22d.

#### THE PROGRESS OF THE CROP SEASON.

CHICAGO, SEPTEMBER 5, 1898.

The past week was clear, hot and dry up to its ending, when good scattered showers fell over central and northern counties; the temperature averaged from 8° to 10° daily above normal, the week proving the hotest of the season. Corn made good progress, early fields are ripening rapidly and cutting has begun, late fields are in roasting ears and generally filling well. Threshing and plowing advanced slowly, owing to the heat; seeding has begun in northern counties, with promise of large acreage. Second crop clover, broomcorn, stock peas and millet cutting continues: buckwheat is rapidly maturing. In central and southern counties grasses and pastures are needing more rain, also late vegetation generally; roads and fields are dusty there and plowing is delayed. Grasshoppers are reported in many counties and are somewhat destructive.

#### CHICAGO, SEPTEMBER 12, 1898.

The past week was cool, partly cloudy and dry, except showers at its beginning, which were heavy in north-central and west counties. The temperature averaged about 6° daily below normal; light frosts occurred on the mornings of the 8th and 11th, with no damage. Cutting is general in early corn fields; late fields are ripening slowly and will require ten days or two weeks before cutting will begin. The yield promises to be fair in all sections, and will be large in many northern and southern counties. Wheat and rye seeding is becoming general; plowing continues, also the harvesting of stock peas, clover and broomzorn. Pastures are generally good.

#### CHICAGO, SEPTEMBER 19, 1898.

The past week was nearly normal in temperature, partly cloudy and showery, causing late corn to mature slowly and ten days will be necessary to place it all beyond frost injury. Cutting in early fields continues and a little husking has been done in the southern counties in the very early corn. Plowing and seeding continue generally; early sown fields are coming up well. Harvesting of broomcorn, buckwheat, sorghum, stock peas and late clover continues. Turnips, pumpkins, squashes, melons and tomatoes are abundant; pastures good and stock feed plentiful. The peach crop is mostly marketed, except in northern counties; grapes and pears are plentiful, but apples very scarce.

#### CHICAGO, SEPTEMBER 26, 1898.

The past week was warm, partly cloudy and showery, west-central counties having very heavy rains. The temperature averaged from 5° to 7° daily above normal. Wheat seeding is generally well advanced, although some delay was caused by wet fields. Early sown wheat and rye are up with good stand and growing finely; a large acreage is general. Corn is now safe from frost injury and a fair to good crop has matured. Cutting continues, but is nearing completion; a few are husking. Pastures are excellent and stock feed plentiful. Late crops are generally being harvested. The crop season is ending, and as a whole has been a successful one.

#### OBSERVER'S NOTES.

COBDEN.—On the 5th, 1.06 inches of rain fell in 28 minutes.

John Buck.

BLOOMINGTON.—The month was a splendid one for fall pastures and fall plowing.

M. P. Lackland.

OLNEY.—On the 4th from 12.46 to 12.48 p. m. rain in large drops fell from a clear sky. Victor E. Phillips.

RAUM.—In the last 48 hours of the month we had nearly three inches of rain, and it still continues on the 1st of Oct.

Daniel Lawrence.

Dixon.—On the night of the 4th a wind and rain storm did considerable damage to orchards, corn fields and wind mills.

Eustace Shaw.

HAVANA.—The Illinois River was 3.8 ft. above low water on the 1st, 5.2 on the 8th and 4.5 on the close of the month.

J. M. Ruggles.

Рипо.—On the 4th 1.91 inches of rain fell in one hour at 1. p. m. Corn was blown flat over a portion of the south part of the county.

H. A. Burr.

Pana.—High wind on the 14th, breaking down some corn. The weather of the month was fine for corn, also for wheat seeding; pastures are extra good.

C. W. Sibley.

TILDEN.—There was very little thunder here during the month, the storm on the 23d gave some thunder, lightning and hail, causing damage south of us. James A. Caldwell.

FLORA.—On the 15th at 7.30 a. m, the wind suddenly changed from S. to NW. and intensely black clouds began to roll up, followed by a heavy shower, accompanied by thunder and a trace of hail.

H. C. Michels.

RILEY.—The minimum temperature of the month (44) was the highest, except in 1870 and 1884, which I have recorded in 36 years. There was no frost here and only Sept. in '65, '70, '84, '91 and '92 have we escaped without frost before.

John West James.

KNOXVILLE.—The month has been fair for farm work, but the farmers do not seem to be in a hurry about seeding. Threshing is nearly finished; some sprouted grain, due to bad stacking. Fall grain coming up nicely; corn maturing well, but very little being cut; peaches all marketed.

C. N. Butt.

Barometer and Wind Table.

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Stations.	Mean.	Highest.	Date.	Lowest.	Date.	Fotal meve- ment.	Average hour-	Mazir	Direc-	Date.
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Olney Oswego Robinson	30.05 30.06 30.02	30.36 30.52 30.34	10	29.71 29.70 29.90	22 22 4					
St. Louis Springfield	30.02	30.42	10	29.70 29.63	22	6,627 5,825	9.2 8.1	30 27	sw. e.	5 21
Averages	30 01	30.47		<b>3</b> 9.70		6,132	8.5			

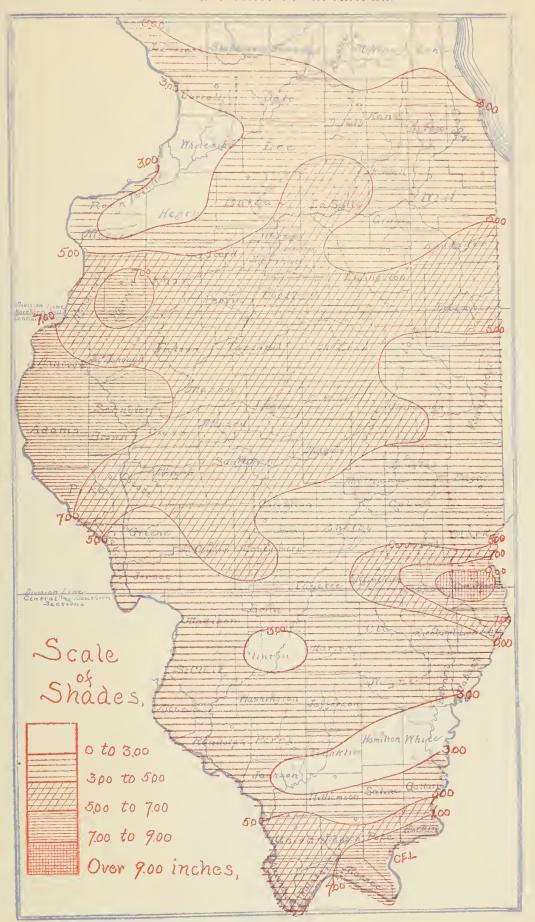
#### Climatological data for September, 1898.

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Stations.	Counties.	Elevation feet.	h of record years.		Departure from the normal.		egrec			daily		sarture from disa normal	Greatest in 24 in hours.	otal snowfall unmelted.	rainy	nber clear days.	y days.	Number cloudy days.	ling direction wind.	Observer.
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Note,—Unless otherwise indicated the highest, lowest and mean temperatures are from maximum and minimum thermometers. \*Highest and lowest temperature from observed readings. 1. Mean temperature from 7+2+9+9+4: 2. 8a+8p+2: 3. 7a+7p+2: 4. 6a+6p+2: 5. 7a+2p+2: a. b. c. d. etc. number days missing. @U. S. Weather Bureau Stations. + Same temperature occurred on more than one day. + Trace in precipitation column when amount is less than 0.01 of an inch. All records are used in determining State or district means, but State and district departures are determined by comparison of current data of only such stations as have normals.

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Daily precipitation for September, 1893.

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Stations.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 5	1 :	22	23	24	25	26	- 27	28	29	30	31	Tot
NORTHERN DISTRICT.	1					1				-								-	- 1	1	1	1					1					
Ashton				. 28	·75					1			.36	1.00	.04						1	.02								+		3.61
Cambridge				.44	.70					+		+	.66	+	+	.05				•	`;' '	.20								.15	• • • •	4.29
Chemung		.00		.40	.15				. 23				.30		•95							.00										2.72
CILICAGO				, 12	.58	.40				+						.07						·77	.20	.02				****	• • • •	·G		3.16
Dixon				. +	.75	.19				+			.42	.71	.04							.90										3.01
Dubuque, Ia Dwight			1	.02	1.50	1.49							·51	.01							· · · I	.31	. 03	+					+	.01		3.07
Elgin					1.16	. 25				1 +			.21	.67	- 38	.30						.88					1			- 55		4.40
Ft. Sheridan					.41	1.07							- 38	.77	.09	• 48 • 01	+	****	****	•	02											2.48
Glenwood				2.00	.63		1						. I4	.06							+	45								15		3.84
Henry				.11	1.02	1.23							. 25	•95	. 20	. 12					2	.75	20							†		6.91
Joliet		.03		.12	.90	-68							. I2	. 00	014	. 0.4				1.	! !	.03 .						+		15		2 20
Kishwaukee				2.00	1.25	.13			T				.50	.07			_ T				!	.88										2 40
I o Crongo					.08	.32				1			.12	.44	.09						I	. IO .		. 13			l			.2I		3.07
Lanark Martinton	• • • •		†	1 .05	2.07	1.16	• • • • •		.00				-35	. 50								. 97	.13									3.66
Minonk				.21	1.08	1.54				†			.48	. 04						]	†   I	.25	• 54							. 33		5.47
Monmouth			.21	. 23	1 89	2.43							.18	. 21			)				†   I	• 59	-0I		+		1					7.15
Ottawa			. 03	1 +	.76	1.02						†	. 23	1.32	.30						+ 1	.87 .	!							.37		5.90
Reynolds				.03	.18	.50							.62	.06	.06	• • • • •					†  I	.31	+									2.76
Round Grove	1 +			.76	.31	1							.49								† 1	. I2 .					1			+		2.16
St. Charles Scales Mound					.84	.20							. 22	.71	. 23	.13						.84 .								.70		3.87
Streator					. 26	2.20	†			1		. 22		. 10	+					•		• 75	. 20							. 47		2.62
SycamoreTiskilwa			• • • •	1.00	****	1. 10				10.		• • •		.61	.62						1	. IO .										3.71
Walnut.				†	.76	•51						+	. 27	1.03	. 00						†  I	. 30	- 04							+		4.58
Wheaton				. 03	1.30				.05				.12	. 50	- 57	+35					TI	. 25 .		- †						.18		4.65
Winnebago Averages	+	+	.01	.28	.89	• 59	+	+	.02	+	.00	.01	.31	.45	.18	.05	.01	.00	.00	.00	† 1	.09	.05	.01	+	.00	-00	+	.02	.12		2.47 4.II
CENTRAL DISTRICT.			1															- 1	- 1			- 4										
Alexander				.11	10.	.89							.42	.13	.32	t	.09				+ 1	.53 -			1.06			-41		, 22		5.19
Astoria				. 47	2.00	00.1						• • • •			†	†	7 1				40	• 5/	-1-1		.31			1		1		6.68
Bushnell				†	1.68	1.88							1.10							I .	00	. 25 .			. 22		1					6.49
Carlinville				. 22	614	• 49						†	- 58	.07	+84	1	. 08															5.39
Carroliton				.32	.37	•06	]						.75	.04	.23		.13				1.51	.0510		. 40	. X5				041	. 38		4.24
Coatsburg Danville				1.05	•90	1.12	+					.II	.98	.88	. 16	****					26 6	• OZ	. 05	1	I. IO		f .	(				8.80
Decetur			OI	2.54	+ 34	044	+05						. 50				.02				04	. 59 .	. 10		.25	†				.12		4.00
Effingham				.15		.48								. 05		+	+				4 4 1	. 14	. 10		1.85		1		+ 1	. 15		5 . 20
GraftonGriggsville				1.71	1.20	* O.T							.82			.04	. 05															4·53 6·83
Hannibal Mo				1.30	. 4/	1.3/				• • • •		. 25	.76	. 22	.IO	+	.OI				57   I	.70	Τ	]	1.55		-70					8.86
Havana				.09	•45	• 43						+				• • • •					04 1	. 44 .			1.78				:	. 05	• • •	6.92 5.56
Keokuk, la				1.28	1.01	1.90				1		-14	. 28	. 23							2011	. 10	. 53		- 44					+ 1		8.07
LaHarpe Lexington				.04	1.52	1.19							.14	.20							1	.76.		Т	Т					58	[	6. 42 5. 23
Loami				.67	.02	.90			1			+	- 59	.06	•3I	+ (	.06		.	! '	0312	+ 29		. 37	!					•37		6.69
Martinsville Mattoon				.38	. 04	1							.65	.12	.38		.04		:			• 19	.10		1.00					.411		4.49
Morrisonville				. 20	T	.40		î I				+	•34	.04	.72				.		†  I	. 25 .			1.48					. 17		4.60
Doloctino				. 30	.40	. 12							.70	17	1.08	+	.22				15	.74 .		!	3.30				. 13	. 10		5.14 7.42
Pana Paris				. 25	1	.27					• • • •		.32	.11	. 24		T .				04	.44 .	• • • [ ,		I - 75					. 48		3.90
Peoria	. 04			1.05	1.05	. 04		1					. 24	.96	.02			] .	.		i I	.68	. 33	.10	.72					- 47		4.71 6.05
Philo				34	•53 †			1		••••		••••	. 51	.04	. 22				.		†   .	,66 .		+	. 54				+	. 24		5.23
RantoulRobinson				1.11	+	3							.80	. 26	1.47		. 25		.		44	71 .		.02	5. 10				13	.15		3.86
Springfield.				.22	.10	• 99						T	+51	. 04	. 32	T	. 04				01   1.	.70 .			7.02	+				- 80		6.82
Tuscola				.31		1.00		1				. 25	. 50		. XO		.IXI.			1	32	. 10	T I		TO			1 1	+ 1			4.82 5.62
Averages	†	•00	†	.64	.65	.67	†	.00	.00	†	.00	. 02	• 54	. 23	.32	+	.06	.00	.00	.00	23 1	II	.05	.06	10.1	†	.02	-01	.02	.23		5.86
SOUTHERN DISTRICT.						0-	-1																								i	
Carlyle		• • • • •	• • • •	.06	•53	.87	.02		• • • •	••••	• • • •	†	.78		+	10.	† .				16	61		• • •					.09	2.95	••••	6.11
Chester	.01				-33	.00							1.23	.05	.06	+	.08				••]	.75			. 04					.75		
Cisne				.04	2.00	. 13							1.34	. OI	.90		.07		-		30 .	. 44 -			. 68				.40	. 04		4 - 35
Flora				04		.41							1.19	11	-30	.01	.22		: : :   :		Τ	.70			1.12			+	.10	• 97		5. 2I 4.76
Friend Grove				. 27		. 06							•94	]	.42		+  -		-		†   .	.72 .	• • •   .		10.1				+ 1	.12		3.54
Grayville				.05	+	. 50					::::	+	.60	+ 1	•45						t   .	.60			.30		••••	.02	.02	. 24		2.83 3.80
Ilallidayboro						. 45	• • • •						1.20		-17	.04					24 .	.41 •							.02	•34		2.87
McLeansboro					.14	. 53						+	.82	12	• 46	10.	.13 .				03 06	0I .			. 20		• • • • •		+	. 20		3.80
Mt. Carmel.					.06	- 13	•••	• • • •				+	.08		.65		.03 .				40	20 .			1.89					. 20		3.64
Mt. Vernon New Burnside				†	. 20	· I5	• • • • •						2.08			.35					02 .	20 •			- 57				.65	. 85		4.54
Olney				+	+	. TS			- 1			+	.89	. 27	.37		.07 .				†   .	47 .	• • •   •		1.61				.31	. 27		4.4I
Plum Hill					.28	.67					••••	†	.90	.21	.17		.IO .				†   •	.05 .	,		01.1			+		.13		3.93 7.68
St. John					.02	.50						.70	.09	III	· IO	.03					49	OT .	• • • •		.79				.33	40		3.60
St. Louis, Mo				.01	†	.70			!			. 02	-80	.08	.02	10.	ATT .				33 .	54 .			. OT				+ 1	- 02		3 - 4 - 5
Averages	+	.00	•00	.03	. 20	-37	+	.00	•00	.00	•00	. 04	•99	.08	•39	.03	.10	.00	.00	.00	21	37	.00	.00	.61	.00	†	†	.14	.56		4.11
Averages for the State	†	+	1	•35	.64	• 57	+	†	.01	†	•00	.02	•56	. 28	. 28	.02	.05	.00	.00	.00	14	93	04	.03	•52	†	.01	.01	.04	. 26		4-77

<sup>†</sup> Trace, when precipitation is less than o.or of aninch. a, b, c, d, etc. number days missing.

ANIAE SCILA CHILL "S"

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# U. S. DEPARTMENT OF AGRICULTURE.

REPORT FOR OCTOBER, 1898

## ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

# WEATHER BUREAU.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE.

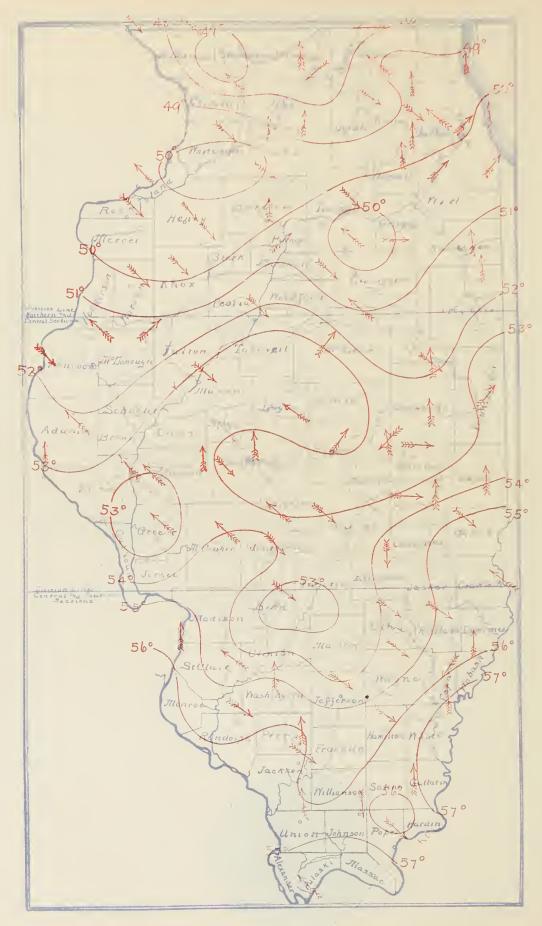
UNDER DIRECTION OF

WILLIS L. MOORE

BY

CHARLES E. LINNEY.
SECTION DIRECTOR





U. S. DEPARTMENT OF AGRICULTURE,

### CLIMATE AND CROP SERVICE

OF THE

### WEATHER BUREAU.

CENTRAL OFFICE: WASHINGTON, D. C.

#### ILLINOIS SECTION,

CHARLES E. LINNEY, Section Director, CHICAGO, ILL.

VOL. III.

CHICAGO, ILL.

NO. 10.

Sleet was general over the state with the storms of the 18th and 25th.

Our Observer at Palestine reports apple and cherry trees in bloom, for the second time during the season, on the 12th.

Solar halos were generally observed on the 23d, 27th, and 31st; lunar halos on the 23d, 24th, 27th, 28th, and 31st.

Only one report of loss by lightning has thus far been received for October, this shows the loss of a steer valued at \$40.00.

Fog prevailed over the northern district on the 1st and 7th to 9th, in the central district at a few stations on the 5th and 7th, and in the southern district on the 5th and 7th to 9th.

Thunderstorms were common over the state on the nights of the 6th-7th, 10th-11th and the 16th-17th. A few northern stations also report lightning on the 25th, with light hail.

An additional report of loss by lightning during June gives the killing of a heifer valued at \$13.00. An additional report of loss by lightning in July gives the killing of a cow valued at \$25.00, and an additional report of loss during September, gives a destruction of a barn, with contents, valued at \$730.00.

The convention of Weather Bureau officials at Omaha on the 12th, 13th and 14th was in every way a great success. More than twice as many as at any previous convention were present, including a number of Voluntary Observers. The meetings were held in the Commercial Club rooms, the Chief of the Bureau presiding, and an elaborate and excellent program was given. The papers and discussions covered a wide range of subjects and showed the extensive field of work successfully undertaken by the Bureau. Illinois was represented by Mr. C. N. Butt, Voluntary Observer at Knoxville, Mr. Henry J. Cox, Forecast Official, Chicago, and the Section Director.

The temperature of the month averaged 52.1°, which is about 1° below the normal. The third day was generally the warmest one, and on that day the highest temperature of the month, 90°, was recorded at Decatur. Many stations recorded 89° on the same day, and maximum temperatures above 80° were recorded in all except extreme north counties. The lowest temperature of the month was quite generally recorded on the 27th, Lanark, Carroll Co., registered 14° on that morning. This gives an extreme range of 76°, while the average of the greatest daily range was 33°.

Sudden and marked changes in temperature were common during the month. Following the first warm period, which was on hand at the beginning of the month, the temperature fell suddenly on the night of the 5th, but rose rapidly again on the 7th. A second fall in temperature occurred on the 12th and the temperature continued low until the morning of the 15th; a third fall in temperature came on the night of the 17th, and the temperature continued comparatively low until the evening of the 23d, when a short rise carried warm weather over the forenoon of the 25th; a fourth fall in temperature followed that night, and low temperatures prevailed until the close of the month. The first four days were warm ones and somewhat off-set the very marked cool periods from the 12th to 15th, the 18th to 23d and 26th to the close of the month. During the latter period very low October temperatures were recorded, several degrees below those observed in October 1897.

The precipitation of the month averaged 3.96 inches which is about 1.96 inches above normal, and much in excess of the precipitation during October for several years

past.

Five rain periods passed over the state during the month. The first began in September and continued until the evening of the 2d; the second began on the 6th and ended on the 7th; the third began on the 10th and continued until the 13th; the fourth began on the 16th and continued until the 22d, and the fifth began on the 24th and ended on the 26th; light sprinkles also fell on many other days during the month. It was a rainy, gloomy month, the week from the 16th to the 22d was especially wet and disagreeable, and being the week of the peace jubilee in Chicago, was brought home to its people and visitors with distressing vividness.

The greatest amount of rainfall recorded within the state was 6.42 inches at Cobden; the least 2.22 inches at Astoria. The greatest amount in any 24 hours was 3.30 inches at Cobden on the 1st. The 25th gave the greatest average precipitation on any one day for the state as a whole, although the 1st, 10th, 17th, 20th and 25th were all days of heavy and general precipitation.

Over the north half of the state and especially in west counties considerable snow fell with the storm of the 25th-26th. Lanark, Carroll Co., measured 8 inches during this storm, Cambridge measured 6 inches, and the average for the northern district was slightly over 2 inches, while for

the state as a whole the average was one inch.

There were 11 days with 0.01 or more precipitation, also 9 clear, 8 partly cloudy and 14 cloudy days during the month. The prevailing wind direction was NW.. with an average hourly velocity of 10.6 miles; highest velocity 63 miles from the SE. at Chicago on the 27th. The barometric pressure of the month averaged 30.03 inches; highest 30.43 at St. Louis on the 31st, lowest 29.39 inches at Davenport on the 18th.

#### FARMING OPERATIONS.

The month was not very favorable for farming interests, it was too cold and wet, delaying work, making roads impassable, and causing outstanding crops to mold and rot, corn, especially, suffered much.

Wheat seeding continued the first half of the month over the southern counties and a large acreage has been sown. The plant came up well, generally, made vigorous growth and at the close of the month is in fine condition. A few in southern counties report slight damage by the Hessian fly and grass hoppers. Rye is also in splendid condition, seeding in the rye fields being completed the first week of the month.

Corn, even in the late fields, became fully matured before the first sharp frost, which was on the 14th and 15th. Late corn generally proved a good crop, better than early, the long season and late frost favoring it. Severe storms the last of September and throughout the past month, however, have blown down much corn and, with the wet, have resulted in a very considerable loss by rotting, mold and sprouting. Complaints are general over the state, and much loss is certain. Husking and cribbing have hardly begun because of the wet and unfavorable weather, many also waiting for sharp frost to harden the grain. Shocked corn has received a severe wetting and much of it is discolored and damaged.

Potatoes have been dug; the yield varies much. many north and central counties reporting a poor yield, others fair, while southern counties report more favorable yield. Sweet potatoes were generally good.

Sorghum making continued during most of the month over the south half of the state and a large amount of molasses of good quality has been made.

Fall pastures have been exceptionally good, and a very long season closes with pastures almost equal to spring. Meadows also are in good condition.

Very few apples have been found to gather, the crop proving an absolute failure. North counties alone report a few apples of inferior quality.

Roads the latter part of the month have been very bad, the continued wet weather making them almost impassable.

### OBSERVER'S NOTES.

Charleston.—Ice formed on the morning of the 15th.

Jacob B. Dazey.

RAUM.—First frost was observed on the 13th, heavy frost on the 22d.

Daniel Lawrence.

Effingham.—First killing frost on the 15th; ice formed on the 23d.

Alferd Fitch.

PALESTINE.—Frost of the 14th caused injury to very tender plants only.

Jno. E. Templeton.

Pana.—A trace of frost on the 14th, and killing frost observed on the 23d.

C. W. Sibley.

ROUND GROVE.—A heavy frost the 13th, the first to do any damage to vegetables.

R. A. Hawley.

GRIGGSVILLE.—First snow of the season fell on the 18th, snow again fell on the 25th. Emily R. Gray.

Coatsburg.—The 25th was remarkable for the severe snow storm which prevailed.

J. R. Lambert.

Equality.—The morning of the 27th gave the lowest October temperature (25°) for 7 years. Lucien W. Gordon.

HAVANA.—Illinois River was 4.5 ft above low water on the 1st and 6.2 ft above at the close of the month.

J. M. Ruggles.

MINONK.—At the close of the month corn husking is in full force, at least one-sixth of the crop is spoiled.

O. M. Davison.

Scales Mound.—Light frost was observed on the 6th and 9th and killing frost on the 12th; first ice on the 14th.

Jos. Vipond.

CAMBRIDGE.—Farmers have been delayed in picking and cribbing corn, and on account of the corn being down it is being seriously injured.

S. B. Randall.

Wheaton.—Light frost observed in low places the mornof the 11th; first snow about 9 p. m. the night of the 12th; ice formed on the morning of the 15th.

Wm. H. Johnson.

Mattoon.—At the close of the mouth meadows are as green as in the spring; very few leaves have fallen, and the maples are just beginning to turn color.

Jos. Withington.

GALVA.—On the 25th rain turned to snow at 2.45 p.m., there was a high wind and it was a very rough day. On the morning of the 26th trees and shrubs were bending under their weight of snow and ice.

F. U. White,

RANTOUL.—It is reported by many farmers that much corn is being spoiled; seeding completed; pastures good and hay plentiful and cheap; stock in fine condition; potatoes scarce and being shipped in to supply local demand.

H. B. Clark

Barometer and Wind Table.

				anu	** 11	iu Tai	ore.			
		Bar	ome	eter.				Win	d.	
Stations.	Mean.	Highest.	Date.	Lowest.	Date.	Total move- ment.	Average hour-	Mar. selles.	Direc- tion.	
Bloomington Cairo Chicago , Davenport Dubuque Galva Hannibal Kishwaukee Minonk Olney Oswego Robinson St. Louis Springfield	30. 04 30. 07 30. 02 29. 99 30. 01 30. 04 30. 02 30. 02 30. 00 30. 01 30. 04	30. 35 30. 42 30. 38 30. 35 30. 41 30. 39 30. 41 30. 35 30. 29 30. 29 30. 39	31 31 6 6 6 6 31 30 6 6 31 31 30 6	29.57 29.66 29.59 29.39 29.44 29.46 29.40 29.58 29.58 29.52	17 17 18 17 18 17 18 18 17 17 17 17 17 17	6, 334 13,650 6,395 6,774 7,517 6,616	S · 5   18 · 8   8 · 6   9 · 1   10 · 1   8 · 9   1   10 · 7   10 · 2   1	33 63 30 36 38 32	w. se. e. uw. s. s. s. s. s. s. sw. nw.	25 27 17 30 17 17 17
Averages	30 03	30.38		29.51		7,893	10.6			

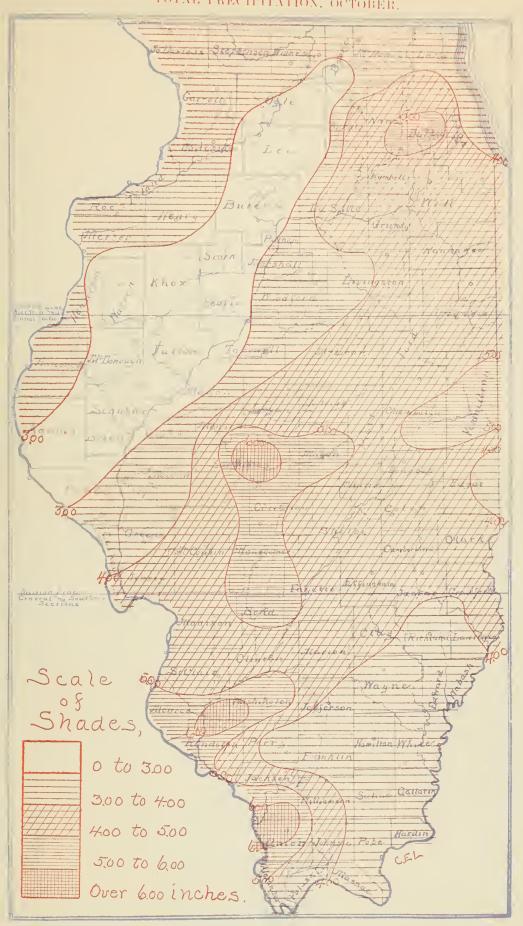
### Climatological data for October, 1898.

					Climate	olog	rical	data	for (	Octo	ber, 15	308.							
			rd,	Temp	- eratnre,in						ecipitat							_	
		eet.	reco				1	1			E E	1	1		£.	Sky.		direction	
Stations.	Counties.	Elevation feet.	in a		Departure from the normal. Highest.				st daily ge.		re fro	in 24	Total snowfall unmelted.	rainy	elear	partly days.	Number cloudy days.	z dire	0.1
		levat	Length o	Mean.	Departr the no Highest	te.	Lowest.	e.	Greatest	al.	Departure	Greatest i	l sno melt	Number radavs.	Number days.	Number cloudy d	ber clays	Prevailing d wind	Observer.
NORTHERN DISTRIC	_	网	ĭ	N N	a H	Date.	Lo	Date	Gre	Total.	Dep	Grea	Tota	Nun	Num	Num	Mun	reve	
Ashton	Lee*1	830	3	48.5	+0.1 75				1			1					1	1	
Anrora Cambridge Chemnng	Kane Henry	676 824	19	49.8 -	+0.1 75 -0.8 85 -1.8 79	3 3	26 22 25	27 27 26	30 5	2.85	+1.65 +2.39	0.92	2.0 I.7	14	5	11	15	s. s.	Ira R. George.
Davenport, Ia	COOK	820 824 613	4 27	50.6 -	-0.7 78 -1.2 75	3	18	27 27	34 3	1.06 3.41 3.26	+1.61 +1.84 +0.33	2.30 1.10 0.86	6.0	11	2 4	15	14	nw.	Dr. M. M. Robbins, S. B. Randall, Jos. Knhles,
Dixon Dubuque, Ia	Lee	725 651	27 8 2.1	49.2 -	-0.5 80	3	26 22	26 26	32 3	3.38	+0.85	1.66	2.9	16 10 15	5	5	17	se.	Central Office. Julius M. Sherier
Dwight Elgin Ft. Sheridan	. Kane	657 800 .	7	49.4	-1.5 74 +0.8 84 82	3 3	25 28 22	27 15† 27	41 4	.86	+1.17	1.26 0.82	3.6	14	9 3 6	4 14 8	18 14 17	s. nw. w.	E. H. Bowie
Galva Henry	Ilenry	693 842 700	5	49.3 -	-0.2 79 -2.1 83	3 3	28 24	15† 26†	38   3	.76 .10	+1.16 +0.86	1. 25 1. 06 1. 16	1.0	15 7	6	7		8. S.	Prof. G. W. Horton. J. S. Dumser. Post Surgeon U. S. A.
Joliet Kishwaukee	Will Winnebago	541 810	6	50.6	-2.1 87 -0.8 81 -3.9 78	3	24 26 18	28 27	38 3 32 4	.11	+1.02	1.15	1.9	12 12 15	8	5 9 8	11	011	Dr. Frederick A Powell
Knoxville. LaGrange. Lauark.	· Cook	775 657		49.1 -	-I.5 84 -I.3 83	3 3 3	21 27	27 26 27	40 2	.74 .48	0.0	1.00	2.0	12	5 1	13		ne.	F. M. Mnhlig. Geo. Stevens. C. N. Butt.
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Note,—Unless otherwise indicated the highest, lowest and mean temperatures are from maximum and minimum thermometers. \*Highest and lowest temperature from observed readings. 1. Mean temperature from 7+2+9+9+4: 2.8a+8p-2: 3.7a+7p-2: 4.6a+6p+2: 5.7a+2p+2. a.b.c.d. etc. \*\*umber days an inch. All records are used in determining State or district means, but State and district departures are determined by comparison of current data of only such stations as have normals.

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		- 1	Dist	######################################	ide e
		stations.	Aurora Aurora ("ambridge") ("hemung Bayenport, in Dixon	Alexander  Storia  Bloomington  Bushnell  Carlinville  Carlinville  Carlinville  Carlinville  Carlinville  Garigsville  Grigsville  Marnipape  Lax Ingron  Martinville  Ar Martinville  Martinville  Ar Martinville  Martinville  Ar Panaski  Philo  Sprindfold  Sprindfold  Tuscola  Tuscola  Tuscola	Albion
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#### Daily precipitation for October, 1898.

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Stations.	1	2	3	4	5	6	7	8	9 .	10 1	11 1	19 1	13				17		19	90	91	00	()*}	24	25	28	27	• **	+264	20	91	Total
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Ashton	.05				+	,.	.59 .			.02 .		. 01	. 12			+	.65	. 10	. 10	.15	.04	.04 .			.92				. 93	+ .		2.8
Aurora Cambridge	. 29						. 29 .			. 34	.02 .		01.	.13		.18	.83	.22	. 14	. 54	.03	.03			1.86	.17			.15	4 .		5.30
Chemung	.07						.41 .			1 .				+	+	+	.85	.10	. 02	.14	12	. 18		T	.85	.25			· · · · ·	+ '		3.41
CHICAGO	.30		†		†		. 22			. 16 1	04	†	.02	.28			. 15	.09	. 06	.85	+	+ .		+	.68	. 20			+04	.08	+	3.26
Dixon	.07	.03		+	.01		.26 .			.04 .		.03	.03			15	. 53	.04	-05	11.	.03	. 26		] :	10.1	.02			+	]		3.38
Dubuque, Ia Dwight		.76					.04 .			·41 .		.1I	. 07			. 08	1.26	.22	,06 +	.70	+	. 23 .			1.06	.OI		+	†			3.80
Ft. Sheridan	.30									.09 .				.75			1.06	14		.65	. 14	.21 .		1	. 11					.01		3-10
GalvaGlenwood	.00	.01					.12			.81.						.18			.05	.07	. 07	.22 .	• • • •		1.14	.02	• • • • •		+			2 92
Henry	.25	.12					+   .			. 27	. 08		1 .				. 25	TC	10													
Hospital Jollet	.25	.39					.35			.85 .	.05	.03	.10	. 16			.60	. 20	. 50	-55		.07			.50	.35				(12 0		4.18
Kishwaukee	.03	. 03	1	1		1	.70 .			.02		1	. 20		]	+	. 52	.08	.08		.07			+ :	1.00				.OI			2 74
Knoxville LaGrange	.10	.20					. 35			.25			. 22			.30		·37 ·	.01	. 08	.02				1.05	. 20						4.21
Lanark		.15				+	.30 .	[		. IO		†	.09	.03		+	.62	. 33	.07	12	+	.14 .		+ 1	1.40	.10			1.			3 - 45
Martinton	.15	.72			1	.08	···†:	.:: :		.90	20	†	+ .	.05		::::			.03	.50	.02	.08		+	. 50	. 04	• • • •			.OI		3.86
Monmouth	. 05	.01								.01	• •						.72	. 19	.01		102				.98	.03						2.34
OswegoOttawa	. 27	.31					.02 .		• • • •	. 56		.02	.03				.70	30	†	. 50	7	.05 .		† :	2.05	+			.02 .			4.3
Remolds	.05	.03					.63 .		!	. 18		1 .				. 23	.61	. 20	. 03		.16	.17 .		1	1.20	.33						4.73 3.82
RileyRound Grove	1 1	+09				+	·45 ·			33		† .	.05			+ •08	·75	.06	.13	.15	.01	.0I	• • • •		1.08	.02	• • • •		.03 .			3.4
St. Charles	.24	.10					I.45 .			.42 .	02 .	.03 .	. 10	.20			.70	.24	. 19	.41	.03			1	1.35	.22			.04 .			5.74
Scales Mound Streator	.22	.62	.02	т			.03			.45		t	.05			.15	.55	20	.02	.65	.22	.08	• • • •		. 64	. 10			.01 .			3.33
Sycamore	.16	.08					I.00 .			.33	02	† .	. 24 .		] .		.80	. 22	.05	. 28	10.			1	60				. OI	. OI		4.81
TiskiiwaWalnut	.10	.04								, oi		† ,	. 06			····	.38	25	.11	15	.02	.13 .	• • • •		. 12	.17						2.63
Wheaton	.10	. 21					.65 .			.43 .	.05 .	.02		.36			-57	. 14	OI.	- 54	.03	.06		I	.42	- 34			. 04	.62		5.13
Winnebago Averages	15		+		+	•03	.65 .		.00	† .27 .				.06		.05	.65 .61	18	. 10	. 35	.05	.03		+ 1	. 15	.15		+	, oI			3.80
CENTRAL DISTRICT.												- 1					- 4										.00		.0-		1	3.09
Alexander	. 68	.76								.21 .	6				] .		. 58	20	.03	.83	.01	.05			.18	.01			(		3	3.80
Astoria	.II	.09			†		†	+  .		.15 .	24	1					.61	27	.06	.12	+	.03 .			.51	.03				+ .		2.22
Bloomington Bushnell								:	:::	·63 · ·						.63	.36				+	+ :	.::		.61	.10						2.67
Carlinville	1.20	. 05								.55 .	18						-42	22	† 1	.58 .		.06			• 34							4.60
Carrollton	1.03	.02	- 35	†						· 33 ·								22	.02 1		.02	.04			-69	+ 16	• • • •			• • •		3.57
Charleston	•05									. 05						.40	.90	25	.02	. 02	+	.06		I	.05							2.80
Danville Decatur	1.44						. 10			· 75 · .									+ I			.08			-51	- 06	***		†	+  .		5.06
EffinghamGrafton	1.22	.15					.10 .			.40 .	22		• • •   •				.25 .	12	.03 I	.00	.03	.07			.40	.14 .						4.13
Griggsville	.80	.20								•45			.				. 27		.06		.28	14			.43							4.35 3.01
Hannibal, Mo	. 08						+   -			. 15	46	1	• • •   .			.20	1.04	13	+	.07	10.	+ .			• 79	.OI						2.94
Havana	1.47	.09					.06			30 .	41		:::				.10		.12	.05	.03	.43 .			. 30	.06			.02'.	• • •		2.55 5.13
Keokuk. la	.05									.08 †		1				-55	1.12	22	.06 -		+	. OI .		I	.90	+  .						3.99
LaHarpe Lexington	-50	. 30				- 4	1			. 56 .	25		Τ .				.45	10.		.97	. 20	.16			.71	.50			1			3.15
Loaml Martinsville	I.OI	. 20				+				·51 .	26						.30	29	• 06	.98	†	† L.	-		. 34	.07			1 .			4.08
Mattoon	1.27						.03			57	50						.65			.95 .		.90 .			.44 .	.02						4.35
Morrisonville	1.34	. 23						• • • • • •		.44 .	54			.			.35	30	.82	. 58	·II.				. 40 .							5.11
Mt. Pulaski								100		58	40						.42		.04			.10		::: .	.40	.04			1 .			4.79
Pana	1.51									. 56	62						.35 .	16	. 38	-77	+	.05			.45 .							4.85
Paris Peoria	. 12	- 18										: ::				.02	.80 .	22	. 26	.41 .	.03 .	.20			.63							3.73
Philo	.75	T			• • • • •	• • • •	1.09		•								.43 .	15	. 10 I	. 16	+	.16			.44 .							5-55
RantoulSpringfield	1 20	1.07			+					, 80	46					1	· 42 · .	17	.02 I	. 14	+ -	. 04			.04	10.				- 1	• • •	6.15
Tuscola	-81	.09			1		1		1 .	1511.	10		11.				.44 .	15	. 05	.15	T	.08			.30				1	+ 1.		4 • 44
Winchester Averages	.70	.22	10.	+	+	+	.06	Ŧ 1:	.00	46	29	+	+	+ .	+	.08	·37 .	20	.02	.70	.03	.09		OL	.52	.06	.00	+	+	+	.00	3.75
SOUTHERN DISTRICT.										u										- 1	- 10		m.									
Albion	.85			. 08			.15		، ا	. 08	34						.44 .	03 .		.65 .		.03			-55	.05						3-25
Cairo	2.65	.15		†		+ 1	. 05			II .	50		03				•37	† l .	.OI	.66	+	+   ,			.05	+ 1.		,		.		4.64
Cariyle	2.07	.15					.65		•	34	25						.20	03	10.	.68	·7I	.04		!	.07	.02			+ 1.			4.21
Olama		.08								13 .	23						.29 .	09	.22 .		. 55			!	. 28				- 1	1		3.20
Cobden. Equality Flora Friend Grove	3.30		+	†	+	+	.00	+ "	·;· :	45 1.	75		1 .			]	.46	05		.66	†	+			· 24					!	1	3.45
Flora	1.21	• 08		†		• • • • •	. 13		•	.83	19						.40 .21	05	† I	.01	+	.03	.).		.32 .					•		4 • 06
Grayville	.85			.10	.14					10	60						·57 ·	06	+	. 54	+	+ 11		:::	.43	10.			†		:::	3-68
Greenville	1.30						1.04			.65 .	32						.52 .	IO .	. 15 I	. 071.		. 06			- 33	.04 .						5 - 58
Hallidayboro	1.15	.08		†		+	1.21	†		02	23						.17	04	+ 1	.60		. 03	. [].		· I3 .				†	-		3.77
McLeansboro	1.75	20		•••	• • • •					52 .	33		•••				.27 .	06	- 20	.86	. 20 .				· 1/	.00						4.42
Mt. Carmel. Mt. Vernon.	2.02	.10		.09			.05		:::	†		:: ::			:::		.05 .	08 .		• 90 .					.42	+ :				-		3.53
New Burnside	1 40		T			-021	1		! •	0/	Q31		041		1	. 151	.02			. 02	+ 1.				. 19							4.35
Olney	1.02			т		†	†			50	44	:: ::	:				.15	07	†	.44	.77	.05	: .		.26				†			3 · 06 5 · 34
Raum	.02					.04			2.	22			+ .			.31	.07	† .	. 26	.67	.04				. 27 .							3.90
St. Louis. Mo	1.24	.09			+	.03	10.		<b>4</b>   1	75	16						. 25	12	1 11	. 37	.04 .	.02			.13	.02			†			4.34
Tilden	1.58						2.30			46	33						.21 .	10	· OI I	.15	† .				. 19	.03		••••	+			6.36
Averages	.68	.05	†	+	10.	10.	• 33	+	+ :	38	21	† .	03	.00	00	.02	.49	16	. 08	.58	. 06	.02 .	00	+	.69	.06	.00	1	†	00	00	3.96
			- 15			-	1	0.		1	l	1	1		1			-1	- 1		-	1					-1			7		3.90

<sup>†</sup> Trace, when precipitation is less than o.or of an inch.

3

### U. S. DEPARTMENT OF AGRICULTURE.

REPORT FOR NOVEMBER, 1898

### ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

## WEATHER BUREAU.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE.

UNDER DIRECTION OF

### WILLIS L. MOORE

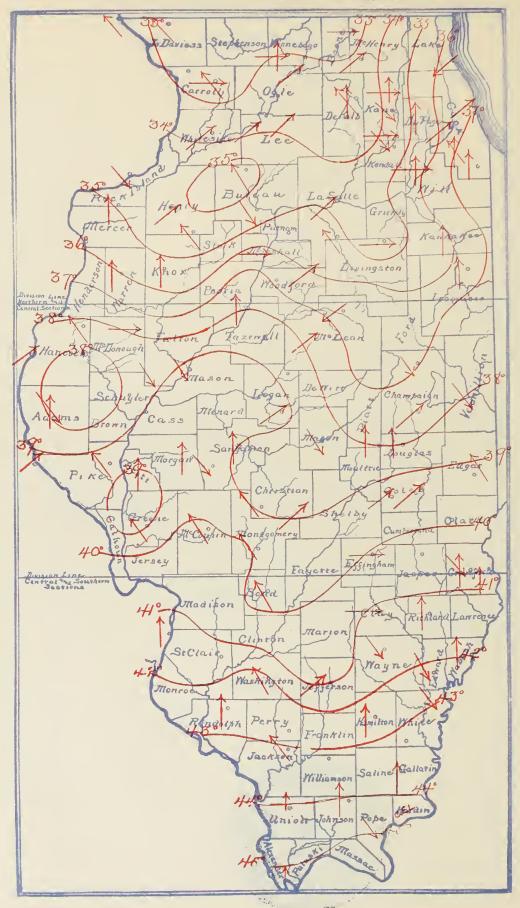
CHIEF OF WEATHER BUREAU

BY

CHARLES E. LINNEY

SECTION DIRECTOR.





U. S. DEPARTMENT OF AGRICULTURE,

### CLIMATE AND CROP SERVICE

### WEATHER BUREAU.

CENTRAL OFFICE: WASHINGTON, D. C.

#### ILLINOIS SECTION.

CHARLES E. LINNEY, Section Director,

CHICAGO, ILL.

VOL. III.

CHICAGO, ILL.

NO. 11.

Fog prevailed generally over the state on the 17th.

We shall soon have a new station at Sullivan, Moultrie County, with Professor J. L. Hughes as Observer.

The Mississippi River at Cordova closed on the night of the 25th; the Fox River at Elgin closed on the 23d.

please attend to this on the day after the close of the month.

Sleet storms occurred over the south half of the state on the 27th to 29th, but were light and scattered and little damage was done.

Lunar halos were commonly observed on the, 1st, 20th, 23d and 24th; solar halos on the 3d, 12th, and 30th, also at a few stations on several other dates.

Observers are requested to read over carefully their instructions in regard to snow measurements; you should give both the melted snow and the actual snowfall in inches.

Thunderstorms were general over the state on the 4th-5th, and over the north half on the 17th, while a few occurred on the 21st; hail fell with the storms of the 5th and 17th.

Observers should not forget, with the approach of cold weather, that the evening is the only proper time to read and set the self-registering maximum and minimum thermometers, any other plan is sure to result in erroneous records.

In our short notice of the convention last month we made a grevious oversight, in that we failed to include in our representation at the convention from Illinois, Mr. P. H. Smyth, Observer, Cairo, and Mr. John Craig, Observer, Springfield. We are pleased to give this correction; Illinois lead in the number of representatives at the convention, and it should not have been overlooked last month.

Mr. Edward A. Beals, Inspector of the Weather Bureau, has recently come to the Chicago Station to office with us, after about three years at the Cleveland station. Mr. Beals was for several years in charge of the Climate and Crop Service of the State of Minnesota, and still retains his interest in this work.

The temperature of the month averaged 38.02, which is 1.1 below the normal. The highest temperature of the month was 80, recorded at Danville on the 4th; the lowest temperature was 6° below zero recorded at Lanark and Scales Mound on the 27th. This gives an extreme range of 86, while the average greatest daily range was 38°.

Two periods of warmth occurred during the month; the first, on hand at the beginning of the month, continued until the 10th; the second, beginning on the 13th continued until the night of the 21st. During the first period temperatures above 70° were commonly recorded. The interval between the first and second warm period, was filled by a cool period, and, beginning with the 22d, a very marked cold period continued with little rise in temperature until the close of the month. At many stations the lowest Nov-A few of our Observers are late in mailing their reports; ember temperature thus far recorded came during this period; both the 26th and 27th were days of very sharp cold.

> The precipitation of the month average 2.21 inches, which is about 0.73 of an inch below the normal, the southern district having a marked deficiency. Six rain periods passed over the state; they occurred on the 4th-5th, 8th to 10th, 13th, 17th to 19th, 21st-22d and 25th to 28th. The precipitation was quite general in each of the rain periods, and the 5th, 9th and 10th were days of practically the same average rainfall, in each case nearly half an inch.

> The greatest rainfall within the state was 4.24 inches at Atwood; the least 0.99 of an inch at New Burnside. The greatest fall in any 24 hours was 1.90 at Palestine on the 9th-10th. Much of the precipitation after the middle of the month came as snow; in the northern district the average for the month was 6.5 inches, while the average for the entire state was 3.4 inches. A light protection to winter grains was afforded during a portion of the month. It was quite general over the northern district during the severe cold of the last week in the month; at the close of the month, however, little snow remained on the ground.

> There were 8 days with precipitation, also 13 clear, 8 partly cloudy and 9 cloudy days during the month. The prevailing wind direction was S-SW., with an average hourly velocity of 11.2 miles; highest velocity 76 miles per hour from the S. at Chicago on the 7th.

> The barometric pressure of the month averaged 30.08 inches; highest pressure 30.56 inches at Bloomington on the 27th; lowest 29.30 inches at Davenport and Dubuque on the

> Note-The mean temperature of Olney on page 5, should read 41.8, departure -1.7; Danville 40.6, -0.3; Cisne, 41.8, -3.0; New Burnside, 43.8, -2.9.

#### FARMING OPERATIONS.

November, in many respects, was a continuation of October and work made slow progress. Vegetation over most of the south and central counties remained green until the freezing weather of the week beginning the morning of the 22d; apple and other fruit trees were blooming, roses also, and grasses and winter grains continued to make rapid growth up to that date.

Corn husking and cribbing made slow progress, and considerable corn remains in the fields at the close of the month. Much of the corn is down and rotting, mold and sprouting are reported general, with much soft and rather chaffy corn. As a whole the crop is far from a good one.

Winter wheat and rye have made a heavy growth and are strong, vigorous and well rooted; the growth has been so rank in many counties that wheat has been pastured. Generally the plants are in fine condition, although some damage by Hessian fly is reported from central and southern counties.

Pastures and meadows remained green and good until the freezing weather beginning the 22d, the rank growth of the grass, however, caused it to be lacking in nutriment.

Roads during the fore part of the month were muddy and bad, and since the freezing weather have been very rough. At the close of the month little snow remains on the ground and the soil is frozen three to four inches throughout central counties. Stock is generally in good condition.

#### LOSS BY LIGHTNING DURING 1898.

During the season from May 1st to Nov. 1st, there have been received by this office 201 reports of loss by lightning, which give an aggregate loss of \$43,091.12, divided as follows: 122 buildings, consisting of barns, dwellings, churches, etc., with contents, damaged or consumed, to the value of \$35,969.00; 221 head of stock killed, causing a loss of \$6,608.82, and hay and oat stacks consumed to the value of \$513.30. The reports received are probably but a small part of the losses actually sustained, as many were no doubt unreported.

A survey of the reports shows a very marked increase in the loss of stock due to the wire fence, and the urgent need of frequent ground wires on those in use; a largely increased loss of barns and granaries during the harvest season, probably due to storage of new grains and grasses; slightly more danger to stock on wet than on dry lands; lack of any marks upon stock in most instances; the general movement of thunderstorms from W. or S.W. to E. and N. E.; a very large number of buildings struck but damaged only slightly; and, finally, an area of marked frequency in losses covering the northwest counties especially, and the northern district as a whole, with an apparent absence of losses in central counties.

### OBSERVER'S NOTES.

Oswego. - Fox River closed on the 27th.

John S. Seely.

ALEXANDER.—On the 23rd at 7.30 a.m., a light earthquake was felt in this vicinity. Geo. H. Hall.

Asnron.—We have had an unfavorable fall for corn husking; fully one-third of the corn is still in the fields.

Ira R. George.

Pana.—Corn gathering commenced the middle of the month, and continued, with favorable weather, to the end.

C. W. Sibley.

HAVANA.—Illinois River was 6.2 ft. above low water on the 1st, 3.7 ft. on the 25th and 8.3 ft. at the close of the month.

J. M. Ruggles.

Minonk.—Corn picking will be finished with ten days of good weather; lots of moldy and spoiled corn; it is turning out from 25 to 50 bushels to the acre.

O. M. Davison.

Lanark.—The month has been cold and disagreeable; many fields of corn not yet picked or husked. Ice was floating in the Mississippi River on the 23d.

M. N. Wertz.

FLORA.—A severe thunderstorm occurred on the 5th at 6 a. m., lasting until 11.15 a. m.; thunder, lightning and considerable wind, with hail were reported from the surrounding country.

H. C. Michels.

GALVA.—On the 5th at 4.18 p. m., a brilliant rainbow with secondary was observed. Snow and hail fell two miles south of the station, and a dash of rain with gust of wind occurred here.

F. U. White.

RANTOUL.—High wind blew from the southeast on the 21st, ending at 7.30 p. m., with a calm until 9 p. m., when wind shifted to NW. and a drop of 51° in temperature occurred during that night.

H. B. Clark.

RAUM.—We had a meteoric display in the NE. about 10 p. m., of the 23d. The month has been remarkable for heavy winds; that on the evening of the 21st was very severe, with a sudden fall in temperature.

Daniel Lawrence.

KNOXVILLE.—The month has not been very favorable for farm work; too much snow and rain for corn picking. Much corn is down and in very bad condition, when picked it is soft, sprouted and some of it is rotten. Considerable corn yet to be picked.

C. N. Butt.

Barometer and Wind Table.

Barometer, Wind.														
		Bare	omet	ter.			Wind							
Stations.						ye.	hour-	Maxi	mum city					
5,000	Mean.	Highest.	Date.	Lowest.	Date.	Total movement.	Average hour-	Miles.	Direc- tion.	Date,				
Bloomington	30.13	30.56 30.46	24 27	29.50 29.55	21 21	6,873	9.5	42	sw.	21				
Chicago,	30.06 30.04 30.04	30.50 30.49 30.52	24 24 24	29.41 29.30 29.30	21 21 21	15,250 6,430 6,158	8.9 8.6	76 37 42	nw.	7 5 5				
Galva Hannibal Keokuk Kishwaukee	30.09 30.10 30.08 30.06	30.52 30.48 30.49 30.46	24 11 11	29.34 29.46 29.38 29.38	21 21 21 21	7,568 6,710	10.5	44 36	s. nw.	7 5				
Minonk Olney	30.04 30.04 30.07	30.46 30.36 30.44	24 1 ( 24	29.37 29.47 29.40	21 21 21									
Robinson St. Louis Springfield	30.04 30.12 30.09	30.38 30.49 30.48	27 11 24	29.48 29.51 29.39	21 21 21	8,040 7,806	11.2 10.8	58 56	sw. s.	2I 2I				
	••••	••••						•••••						
Averages	30.08	30.47		29.42	• • • • •	8.104	11.2							

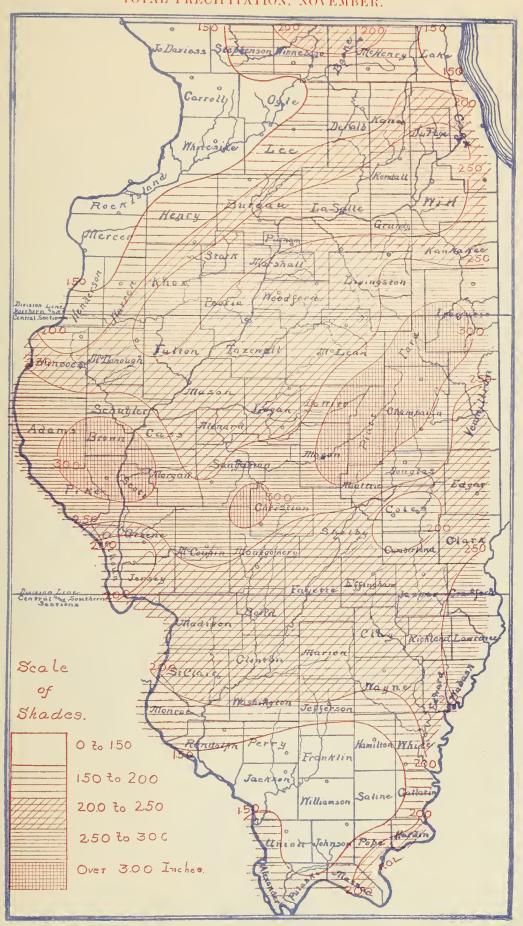
#### Climatological data for November, 1898.

					Clir	nato	logi	ical	data	for	Nove	ember,	1898	3.						
	- The second sec		rd,	Tem	peratur	e,in d	egre	es Fa	hrenl	heit.	Pro	cipltati	on, in	luches			Sky.		ion	•
Stations.	Counties.	Elevation feet.	Length of reco	Mean.	Departure from the normal.	Highest.	Date.	Lowest.		Greatest daily range.	Total.	Departure from normal	Greatest in 24 hours.	Total snowfall unmelted.	Number rainy days.	Number clear days.	Number partly cloudy days.	Number cloudy days.	Prevailing direction wind.	Observer.
NORTHERN DISTRICT.  Ashton	Mellenry COOK Scott. Lee. Dubuque. Livingston Kane Lake Henry. Marshall Kankakee. Will Knox Cook Carroll Iroquois Woodford Warren Rendall LaSalle Rock Island Mellenry Whiteside Yo Daviess LaSalle De Kalb Bureau Bureau Bureau Bureage *3	830 676 824 613 725 651 657 800 693 842 700 650 541 775 657 883 745 750 500 956 715 700 900 966 800 976 717 775 970 970 970 970 970 970 970 970 970 970	3 19 5 4 27 7 27 8 8 24 7 7 1 1 12 5 5 6 6 6 8 8 10 4 15 18 11 2 2 3 6 6 2 2 3 6 5 17 7 3 6 6 6 3 10	33.7 34.6 34.9 37.0 34.6 33.8 33.8 36.6 34.7 36.6 35.4 36.6 35.4 36.6 36.6 35.4 36.6 36.6 36.6 36.6 36.6 36.6 36.6 36	-0.4 -0.8 -1.4 -0.8 -1.4 -2.3 -1.4 -1.2 -1.2 -1.3 -1.6 -2.1 -1.6 -2.1 -1.6 -2.1 -1.6 -2.1 -1.6 -2.1 -1.1 -1.1 -1.1 -1.1 -1.1 -1.1 -1.1	65 67 67 67 65 67 68 68 66 68 66 68 65 69 68 68 68 68 68 69 68 68 68 69 68 68 69 68 68 67 69 69 69 69 69 69 69 69 69 69 69 69 69	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	- 2 - 2 - 1 - 1 - 2 - 2 - 2 - 1 - 1 - 2 - 2	27 27 26 26 27 26 26 27 27 26 27 27 26 27 27 26 27 27 26 27 27 27 26 27 27 26 27 27 27 26 27 27 27 27 27 27 27 27 27 27 27 27 27	40 37 31 37 35 37 34 41 35 40 42 32 32 40 40 33 38 36 40 40 40 40 40 40 40 40 40 40	1.97 2.92 1.91 2.09 2.25 1.37 1.15 2.50 2.22 2.33 2.61 2.13 2.67 2.69 2.81 2.13 2.13 2.13 2.13 2.13 2.13 2.13 2.1	-0.24 -0.16 +0.23 -0.19 -0.50 -0.65 -0.83 -0.12 -0.25 -0.00 +0.64 +0.25 -0.61 +0.29 +0.66 -0.42 +0.06 -0.80 +0.07 -0.83 +0.03 -0.83 -0.03 -0.03 -0.06	0.75 1.05 0.70 0.40 1.20 0.56 0.56 0.75 0.75 0.75 0.96 0.30 0.74 0.95 0.75 0.41 0.40 0.41 0.40 0.50 0.41 0.40 0.50 0.41 0.50 0.41 0.50 0.41 0.50 0.40 0.40 0.40 0.40 0.40 0.40 0.40	11.4 13.6 10.0 9.5 1.8 6.5 2.9 2.9 2.7 2.6 1.0 9.6 8.0 2.5 7.0 8.0 5.5 8.0 5.5 8.0 5.5 8.0 5.5 8.0 6.5 8.5 8.0 6.5 8.5 8.5 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0	12 9 10 13 12 9 7 12 5 11 10 7 7 12 10 10 7 7 11 10 11 10 11 11 10 11 11 11 11 11 12 10 10 11 11 11 11 11 11 11 11 11 11 11	13 11 6 6 11 11 11 12 12 13 13 15 11 16 12 13 14 19 16 15 13 14 11 11 16 15 13 14 11 16 15 13	79 154 47 8 2 2 9 8 7 3 55 8 5 5 5 7 6 6 7 7 9 5 5 5 0 8 8 6 6 7 7 1 3 6 8 8 8 6 6 7 7 1 5 7	10 9 15 11 14 10 10 11 11 10 9 12 10 11 11 8 11 8 11 8 15 16 16 16 16 17 18 18 19 19 19 19 19 19 19 19 19 19 19 19 19	SW. W. SW. SW. SW. SW. SE. SW. SE. SW. SW. SW. SW. SW. SW. SW. SW. SW. SW	Ira R. George, Dr. M. M. Robbins, S. B. Randall, Jos. Kuhles. Central Office, Julius M. Sherier. Eustace Shaw. E. H. Bowie. @ Prof. G. W. Horton, J. S. Dumser. Post Surgeon U. S. A. Prof. F. U. White, Dr. Frederick A. Powell. E. Ill. Asylum, F. M. Muhlig. C. N. Butt. Prof. F. E. Sanford M. N. Wertz. Francis A. Moore, O. M. Davison, D. J. Strang, J. S. Seely, Dr. J. O. Harris, Thos, C. Lewis, John West James, R. A. Hawley, S. L. Adams, R. Williams, Joseph Vipond, Roswell Dow, W. I. Greeley, O. C. Nussle, Wm. H. Johnson, Frank Osborn,
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Note,—Unless otherwise indicated the highest, lowest and mean temperatures are from maximum and minimum thermometers. \*Highest and lowest temperature from observed readings. 1. Mean temperature from 7+2+9+9+4: 2. 8+8p+2: 3. 7a+7p+2: 4. 6a+6p+2: 5. 7a+2p+2: a. b. c. d. etc. number days missing. @U. S. Weather Bureau Stations. + Same temperature occurred on more than one day. + Trace in precipitation column when amount is less than 0.01 of an inch. All records are used in determining State or district means, but State and district departures are determined by comparison of current data of only such stations as have normals.

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#### Daily precipitation for November, 1898.

	DAY OF MONTH.  1   2   3   4   5   6   7   8   9   10   11   12   13   14   15   16   17   18   19   20   21   22   23   24   25   26   27   28   29   30   31														-:																	
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Elgin					. 27			.04			2											1			. 68	. 0.1		. 16				2.50
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Glenwood									.30								. 19					†				.05		.30				2.10
Henry				• • •	. 47			. 25	• 35	•75			.10				+	.10				/			. 10			. 07				2.4
Hospital Joliet								. 36	.74	- 35	; · · · ·		.04				.IO	.09										-07				2.3
Kishwaukee			1	†	.05			†	. 05	. 27							. 25	.12			. 14	+			.10			. 25				1.2
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Martinton Minonk			+	····				. 30									.05	.01	+ 04		.13				.07	.12	• • • • •	.07				2.8
Monmouth				.50	+			•35	.02	. 21		•02	+				.07	.02			11.	.00			.00	.02		.07				1.5
OswegoOttawa						• • • • •		•55							• • •							+			. 08			-03		• • • •		2.8
Reynolds					. 02			+51 †	. 20	.41			.01	. 02		1	.17	.01			. 24	. 07			.05	1 1		• I4				2.88
Riley Round Grove					.11.	• • • •		†	, 18	•48			†	†			. 24	.11	. 06		. 25	. 03			.07	.03		· 08				1.6
St. Charles					. 28			.10	.02	.50			. 16			1	. 16	.12	.07		.22	0 1 0	!		+ :	.15		.10				1.9
Scales Mound				. 04	.01			.02	. 10	. OI			.06	1 1			. 33	.03			.62							11.				1.3
Sycamore				.20	.02			.20	. 40	•54			.10								, 28	1			. 10-							2.47
Fiskilwa				1 +	•84			. 15	-45	.76			-04	.02			.15	.13			.12	.12			.0%	-03		.08	. 20			2.9
Walnut Wheaton				T				. 20	. 34	. 75			.08								.13	.15						.06				1.70
Winnebago					.18		]	+	. 18	.40							. 22	.05			. 28	.10			. 05			- 35				2.34
Averages	.00	. 50	†	.05	. 29	,00	.00	. 17	.21	.01	•00	T	.05	Т	. 00	•00	.17	•05	.01	.00	. 17	.04	1	.00	. 00	.03	.00	.10	.01	.00		2.04
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Alexander	• • • •		1		1.06	• • • •		.11		. 38			.07				10.		• • • •			.15			.08	.07						2.56
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Bushnell			+	+	. 38			. 39	•19	. 20							. 15				• 33				0 4.4	.07		. 50	† .			2.37
Carlinville					•50			†	. 64			1					+			+	. 39	. 20	::::		.05			T				2.63 1.84
Charleston					. 19			- 20	.73	. 29			.04								. 14	1			.02			.05				1.66
Coatsburg					.74			. 37	.60	· 33		т	.07		• • • •		.01				.05	01.			.10	.05		+	+			2.89 3.08
Decatur	• • • •				-80			.10	1.51	.15			.05					. 04			+19					.00		. 06				2.96
Effingham					. 38				.68	.85											Т							.03				. 2. 30
Griggsville					1.80			+	.70	• 37		†	. 06				+ .			+	.05	TI			. 08	}	+	+				3.66
Hannibal, Mo								• 47	. 28								12	.03			.72	.20	• • • •		.02	.05						2.58
Hillsboro								.14	.78	.71			. 0.5								. 23	.09		]		.03	+	.01				2.24
Keokuk, laLaHarpe	• • • •		†			• • • •		10.	.12				.00		• • • •						.69 .45				. 18							2.52
Lexington								. 20	. 25	.76			.02				.02				- 18				+			† .				2.09
Joami		esi-		• • • • •		• • • •		.04	•74				• 06		• • • •						.02	.22			7	.05		10.				2.49
Mattoon								. 12	.78	.80			+							• • • •	. 20	+			.08			+				2.29
Morrisonville		• • • •					••••	.19	.78												†	·41	+ 1			.10	• • •					3.09
Mt. Pulaski									·35				.05								†	. 30				.05		-10			]	2.26
Pana	'				.48			.45	• 75	.41			.05								24	7				12						2.48
Peoria Philo																	.07		• • • •		+45				•08			.05				2.03 3.20
Rantoul					1.18			- 44	1.05	.31		. 06	10.					IO.			·II	1			.00							3.28
Robinson					•72 88			.28	.99		• • • •		.05	†			+				. 14	. 08		• • • • •	- T ()	• 00		. 04				2.52
ľuscola					.74			. 30	.61	.64			.04			• • • []	†	10.			. 14	7			.05	.03		.04	+ 1.			2.60
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SOUTHERN DISTRICT.					.,,				.00	. 5		.					11	'				-1					- 1					2.39
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CobdenEquality					.31				.40	.13							.	• • • • ]			.55									.19 .		1.60
Flora					.61				1.10	.32		+	.03								2.1	+ .				ŤΙ		.04 .		+   •		2.41
Friend Grove					.51			• • • •	1.10	. 25											. 38	+ 1						.17	81.	.07 .		2.58
Greenville					. 59			.03	.75	.61			. 04				.05	****	• • • •		•40	+ 1				.06		.08				2.12
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dascoutahdt. Carmel					•75								+					+			+ 35		}	••••		T 1		-35	† .	.10		2.43
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Averages for the State	.00	.00	.00	+02	• 43	.00	.00	114	. 69	. 48	.00	†	.04	†	.00	.00	T .08	102	, 00 †	.00	. 30	.08	,00	.00	.04	.02	# 1	.07	.02	.02		2.21
		. 00		.03	• 4/		.00	4	•47	- 40		1				.00	. 00	.02		-	. 25	.00		1			1	,	1	1		21

<sup>†</sup> Trace, when precipitation is less than o.or of an inch. a, b, c, d, etc. number days missing.

1.3 no.12

## U. S. DEPARTMENT OF AGRICULTURE.

REPORT FOR DECEMBER, 1898.

### ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

## WEATHER BUREAU.

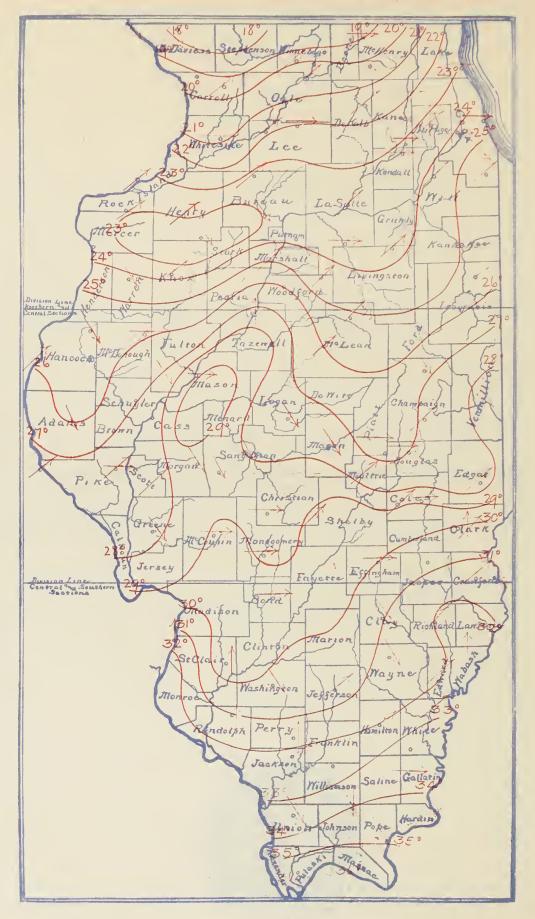
PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE.

WILLIS L. MOORE

BY

CHARLES E. LINNEY
SECTION DIRECTOR.





U. S. DEPARTMENT OF AGRICULTURE.

## CLIMATE AND CROP SERVICE

OF THE

### WEATHER BUREAU.

CENTRAL OFFICE: WASHINGTON, D. C.

ILLINOIS SECTION,
CHARLES E. LINNEY, Section Director,
CHICAGO, H.L.

VOL. III.

CHICAGO, ILL.

NO. 12

Fog was general over the state on the 1st to 3d, and 18th to 21st.

Sleet storms occurred on the 1st to 3d, 12th, 16th, 18th to 22d, 29th and 30th.

Mr. Fred S. Moore is the new observer at Martinton to succeed Mr. Jos. Snyder, and Mr. E. L. Hearn at Halfway to succeed Mr. J. H. Williams.

Lunar halos were commonly observed on the 18th, and from the 23d to the close of the month; solar halos on the 1st to 3d, 10th, 16th, 18th, 24th, 26th and 30th.

The director had the pleasure of appearing before the Carroll Co. Farmers Institute at Savanna on the evening of the 21st to give them a talk on weather forecasting. We found the farmers of that vicinity very anxious to learn about tornadoes; the storm of the 18th of last May was distinctly in their minds as many passed through it, or saw its awful destruction.

Mr. Thos. C. Lewis, our Voluntary Observer at Reynolds, will move from that city shortly. We are sorry to loose Mr. Lewis as he is a splendid observer, and has a fine equipment of instruments. The latter are for sale at very low figure and observers, schools, experiment stations or individuals wishing standard instruments at very low cost should address him.

Several requests have been received for additional copies of Farmers Bulletin No. 24, and we hope to supply some of them, but it will be impossible to place a copy in the hands of each farmer in the state, hence we would suggest that our observers and reporters ask their papers to give publication to the formulae and methods of treatment of cholera and swine plague given in this Bulletin. It will not require much space and will place the information in the hands of thousands, where our efforts can only reach hundreds.

The extension of the benefits of the Weather Bureau to an inch and a half.

Puerto Rico and Cuba is already been well advanced. Weekly Crop Bulletins have been begun for Puerto Rico and will be continued regularly. The central station is at San Juan, from which point bulletins are issued in Spanish for distribution about the island, and a copy is printed in English at Washington. Similar arrangements are now under way at Havana for the benefit of Cuba. Those wishing to know of the agricultural and climatic conditions of these islands will find these new bulletins of much interest.

The temperature of December averaged 26.8° which is about 3.9° below the normal, as determined from the de-

partures on page 5.

The month as a whole was a cool and bracing one. Five cold periods occurred, the first from the 4th to the evening of the 5th; second from 7th to the evening of the 10th; third from the 13th to morning of 15th; fourth on the 25th-26th, and last at the close of the month on the 30th-31st. The 9th day was generally the coldest, although the southern portion of the state recorded its lowest temperature on the morning of the 14th.

The lowest observed was  $-12^{\circ}$  at Scales Mound on the 14th, on which date also  $-10^{\circ}$  were recorded at two stations in the southern district—Mascoutah and Tilden, and on morning of the 31st  $10^{\circ}$  below zero were recorded at Dubuque

and 11° below at Scales Mound.

Warm weather prevailed at the beginning of the month, ending the 3rd; a second warm period followed on the 6th; a third on the 11th-12th; a fourth from the morning of the 15th to the 24th, and a fifth on the 29th and morning of the 30th, the temperature during the last three days of the month going through very marked extremes. The highest was 64°, recorded at Cairo and New Burnside on the 30th. This gives an extreme range of 76°, while the average greatest daily range was 34°.

Very little precipitation fell within the state until the 19th, when rain or light wet snow prevailed until the 22d. Snow again fell over the north and central districts on the 25th, and light snow on the 30th. Little flurries of snow or light rain also occurred on the 1st-2d, 6th-7th, 12th and

16th.

The average precipitation for the month was only 1.38 inches, which is about 0.82 of an inch below normal and one inch below that of '97. The greatest fall within the state was 2.78 inches at Tuscola, the least 0.34 of an inch at Lanark, while just across the border at Dubuque only 0.33 of an inch fell. The greatest fall in any 24 hours was 1.34 inches at Atwood, Piatt Co.

The snowfall of the month averaged 3.3 inches, the central district having the greatest average fall, although the greatest fall at any station occurred at Joilet where slightly

over 8 inches were measured.

There were but 6 days with 0.01 of an inch of precipitation, which is low for December. There were also 14 clear, 7 partly cloudy and 16 cloudy days during the month, considerably more than the usual amount of sunshine, even

though much below the normal temperature.

The prevailing wind direction for the month was SW. with an average hourly velocity of 11.1 miles; highest velocity 47 miles per hour from the S. on the 26th, at Chicago. It was a month of cold southwesterly winds blowing out of areas of high barometer which passed to the southwest of our state. The average atmospheric pressure was 30.13 inches; highest 30.97 inches at St. Louis on the 9th; lowest 29.43 inches at Dubuque on the 29th, a range of more than an inch and a half.

#### FARMING OPERATIONS.

little precipitation falling before the 19th and then not enough to bring the total fall nearly up to normal. The temperature ran quite a little below normal, and steady, sharp winter weather characterized the month.

It was favorable for marketing, finishing field work, corn gathering and husking, ice harvesting, etc. Good progress was made in housing the remaining corn and at the close of the month from 5 to 10 percent probably remained in the fields. Quite a free movement of corn to market is reported, as roads have been favorable most of the month, although rather rough at its close.

The ice harvest has been abundant, cakes from 8 to 14 inches in thickness being general, while north counties report 18 to 20 inch ice; a very large amount has been stored. Frost penetrated the soil to a depth of about 12 inches throughout central counties.

Reports in regard to the condition of winter grain are conflicting. It is certain that little protection was afforded it by snow, and that the greater warmth of the south half of the state gave opportunity for some damage by freezing and thawing, but how much remains to be seen. The south half, however, was rather fortunate in having snow just before both of the severe cold periods of the month, thus from one to three inches fell before the below zero weat her of the 14th, and again from one to three inches fell just before the cold of the 30th-31st, hence it would appear that the crop generally was still in good condition. Late sown grain seems to have received the most damage thus far apparent.

Stock is generally in good condition, and feed is plentiful. OBSERVER'S NOTES.

Bloomington,—From the 1st to 19th the roads were M. P. Lackland. excellent.

FLORA.—The eclipse of the moon on the 27th was not visible here owing to clouds. H. C. Michels.

RAUM.—Sudden changes in the temperature are working Daniel Lawrence. havoc with the winter wheat.

OTTAWA:—Ice cutters were at work from the 8th to 18th, with the ice averaging from 10 to 12 inches in thickness.

J. O. Harris.

MARTINSVILLE.—The dry, cold weather the fore part of the month was hard on wheat, it not being protected by J. B. Sheapley, snow.

Galva,—On the 19th everything was covered with a sheet of ice, which measured about one-fourth of an inch in thickness. F. U. White.

Charleston.—Embarrass River was frozen over on the 8th, the ice reaching 5 inches in thickness on the 16th, but from the 21st to the 31st the river was free of ice.

Jacob B. Dazey.

PANA.—The first half of the month was cold and dry; snow the 12th and rain later aided the wheat. Corn gathering is not completed, probably 15 per cent still in the C. W. Sibley. fields.

HAVANA,—Illinois River was 8.3 ft. above low water December proved to be a bright, cold, dry month, very on the 1st and 6.3 ft. above at the close of the month. The River closed on the 8th and ice of 11 inches in thickness was measured. J. M. Ruggles.

> Dwight.-Two bright meteors were observed early in the evening of the 8th, both were west of the constellation Orion, that is as if they started near that constellation and passed southwestward. G. W. Horton.

> RANTOUL.—Unusual darkness occurred here from 2 to 3 p. m. of the 21st, making it necessary to light stores and houses. The eclipse of the moon was observed from 7 to 7.30 p. m., on the 27th, H. B. Clark.

> KNOXVILLE.—The month has been fairly good for general business; roads fair for hauling wood and coal. Everybody is done picking corn. A very large crop of ice has been cut and stored; stock generally wintering well.

> > C. N. Butt.

Winchester.—December was a very changeable month, with a good deal of cold and more rain than usual, but not much snow, and no snow on the ground at the close of the month. The sudden and severe change in temperature the night of the 29th has caused some of the farmers to express fear of damage to wheat. Geo. Hurd.

Blue Mound,—Weather for the past week (Dec. 17), very favorable for gathering corn and we think fully 90 per cent now under roof; think next week will see it finished. So far no damage is apparent to growing wheat; last dry freeze not beneficial. Roads are good and farmers making free deliveries of new corn. W. B. Newbegin,

FRIEND GROVE.—The month has been a stormy one but the precipitation has been light, only 1.83 for the month. Some corn and considerable fodder are out yet on account of the stormy weather. Roads are very rough. Wheat is at a stand still, no damage yet but much wheat sown too late and does not look well. All stock doing nicely especially hogs. V. E. Majors.

Barometer and Wind Table.

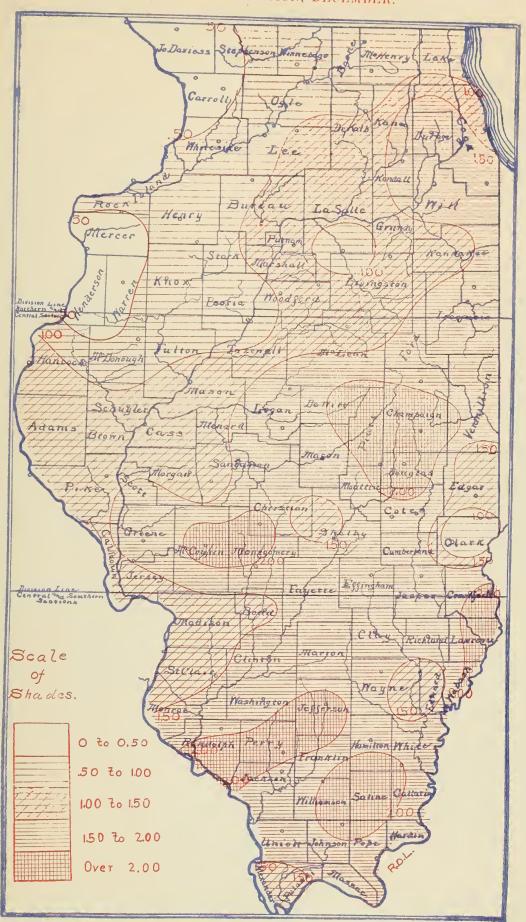
		Baro	mete	er.				Wind.		T.=
Stations.	Mean.	Highest.	Date.	Lowest.	Date.	Total move- ment.	Average hour- ly.	Maxim Soll W	tlon.	Date.
Bloomington Cairo Cairo Chicago, Davenport Dubuque Galva Ilannibal Keoknk Kishwaukee Minonk Olney Oswego Robinson St. Louis Springfield Averages	30.20 30.18 30.10 30.12 30.13 30.17 30.18 30.09 30.03 30.00 30.10 30.11	30.89 30.86 30.82 30.89 30.89 30.95 30.78 30.85 30.80 30.95 30.80 30.80	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	29.64 29.58 29.60 29.44 29.43 29.56 29.54 29.57 29.53 29.53 29.53 29.54 29.55	29 22 29 29 29 29 29 29 29 29 22 29 29 2	7,442 14,814 6,481 5,069 8,086 6,997	10.0 19.9 8.7 7.5 10.9 9.4	40 47 27 36 32 26	n. s. w. hw. sw. nw.	4 26 6 30 26 25

#### Climatological data for December, 1893.

		Temperature, in degrees Fahrenheit. Precipitation, in inches. Sky.										_								
Stations.	Counties.	Elevation feet.	Length of recor-	Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily   5	Total.	Departure from Dormal	Greatest in 24 hours.	Total snowfall on unmelted.	Number rainy days.	Number clear days.	Number partly x	Number cloudy days.	Prevailing direction wind.	Observer.
NORTHERN DISTRICT.						1												1		
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	stations.	1	A Northern Dist.  A urora.  A urora.  A urora.  Chembridge.  Chembridge.  ChilCAGO.  Bayenport, la  Bixon.  Dwight.  Et.  Dwight.  Et.  Shoringe.  Physical or and and and and and and and and and and	Alexander Astoria Bloomington Bushnell Bushnell Carlinville Carlinville Carlinville Carlinville Carlinville Carlinville Carlinville Carlinville Busville Bingtan Bingtan Cargaville Bingtan Cargaville Bingtan Bingtan Bingtan Bingtan Bingtan Bingtan Bana Bena Pena Benilo Benilo Benilo Rantoul Rabinson Springteld Average Average Average Average Average Average Average	Southern Das Abion



#### Daily precipitation for December, 1898.

	DAY OF MONTH.  1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31															EJ.																
Stations.	1	2	3	, 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	'ØS	23	30	31	1,00
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Cordova						+							1							.10	+	. 16	+							+		0.50
Dixon	. 06						1 +									+	1		.33	.03	.01	.15		7	.17			1	+	.03		0.78
Dubuque, Ia	.05	+				†	1		1							T			.18			.49		+	• 08 • 05			+	02	+		0.33
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Ft. Sheridan	Т	1				+						1.04				†			42	. 30	+	. 12			.03	1						0.91
GalvaGlenwood	+											.20							.60			. 59			.40							1.79
Henry	T						• • • •												.50	.10		.30			.10							
Hospital	****					1 :																. 26			. 20					+		1.17
Kishwaukee	.20	+				†	+									[ + ]			.38	.04		.02			. 20					+ .		0.84
Knoxville	l T	•04					.05							• • • •	• • • •				• 33	. 25		85.			12	• • • •				.01 .		0.83
LaGrange Lanark																			01.													0.34
Martinton	****			• • • •		+														†										٠٠٠٠ .		1.80
Minonk Monmouth	T	+				+	+												. 19			. 50	+		+ 1							0.47
Ottawa	.02						†					+							.44	• 37	+	- 35			. 13				+	-11		1.42
Reynolds						†														.04	.02	.18	+		.05		1			.04		0.50
	.04															+			- 28	+		.I2			.10							0.54
St. Charles	.08	. 25				.08										+			.92	.02	.03	. 27	+		.10					.14	• • •	0.41
Scales Mound		+				†	.15										• • • •		.12	+	+	. 25							]	.05		0.77
Sycamore	.04					+						+				†			.46			. 17			. 06					.03 .		0.80
Tiskilwa	T					+	.02	• • • •											-45 -53			. 17	+	+						. 16 .		0.86
Walnut Wheaton	.02	+				+	1					+							-97	.07	.04	.40			. 24					.12 .		1.80
Winnebago		.01	***	+		+	10.	****	+	+				.00		+		+	.50		.01	. 24		+	.12		.00	4		.04		0.71
Averages	.03	.0.	.50	1	,	'	.01	.00		'	.00	.02	- 3	.00	. 00	'		'	- 4/	.07	.01	. 24		' i	.12	1	.00		-	.04		1.03
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Atwood																			1.34			.84								.12 .		2.30
Bloomington						†	+												·85	+	+	1.07						• • • •		+ .		0.55
Bushnell		+				†										}		+.	.70			1.05			7	+						2.10
Carrollton			+									.20							1.02		+	. 58			+		.02					1.82
Charleston			. 30		• • • •	+	···			†		.14		• • • •	• • • •	.00		.13	.65	.01	10.				.16		. 04			.12 .		1.80
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Decatur						+	+	• • • •		†								+ 1	*55 1.00	†	.04	-96			.08		†			.05		1.68
EffinghamGriggsville			+									.25						.10	.30	.03	+	.67					+		.			0.97
Hannibal, Mo		• • • •	.15			• • • •		+										.01	. 59			.31			+		. 06			+ -		1.12
Havana Hillsboro						+						.26					+	.02	·75	. I(*							.15			.06		1.45 2.00
Keokuk, la.		+	.04				+									+			-94	.03	.04									.OI.		1.38
LaHarpe		• • • •								• • • •					• • • •			• • • •	·02	+	+	.40					• • • • •			† .		0.42
Lexington				• • •		i i	+					+	• • • •					1	.46	.02	+	.61		••••	.05					+ .		1.14
Martinsville						.05				†									• 20			. 25			. 16					.04		0.85
Mattoon		• • • •				.12	т							• • • •				-08	.56						12					.12		1.85 2.02
Mt. Pulaski			+																-67	.02		.56			. 25					+  -		1.50
Pana					• • • •		+	+				. 15						. 29	• 30			. 56			+		.03			.09		1.33
Paris Peoria Peoria							†												- 47	.09	.02	. 42			.03					.03 .		0.93
Philo						1									• • • •		- 1		1 . 25	- 06		-80			.12					'		2,23
Rantoul							+		• • • •							T						.38	+							.11		1.74
Springfield						1	+	+ .		1		4			1			1	00.1	.02	†	.79			.02		+			+	1	1.83
Tuscola						+	†					. 4 .						+	.88	••••	†	.71			.72 .		+			. 11		2.78 1.79
Winchester Averages	+	+	10.	.00	.00	10.	+	+	.00	+	•00	.05	+	.00		.02	1		.69	.02	.02	.56	+	.00	.05	+	.03	.00		.05		1.50
SOUTHERN DISTRICT.																												1				
Albion						+	†					. 30				.03	. 20	+	.51	+		+			+		+			.43		1.47
Cairo	1		.OI									.30				4		20	+54	+								1		. TO	+ 1	1.27
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Chester												.12				4	7.0	4	-80	06		02			- 1		. 02			12 .		1.64
Cobden	- 08											. 38				.02	.02	. 18	. 64	.04										. 23		1.69 1.52
Flora		••••	• • • •			+	.02		••••							14		†	00.1	. 09		•04			+		.00			.46	• • •   1	1.83
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Olney						. 02						40				- 18		- 04	.00		!	. 131.			T ! .		. 14			. 40		1.89 1.79
Plum Hill	.04											. 22				.08	. 13	1	1.17			.10								. 27 0	• • • 1	1 84
St. John												.22					.71	.85	.62	.12										+ .	2	2.52
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Averages for the State	.02	+	.01	+	+	10.	+	†	+	+	.00	.10	+	.00	•00	.02	.03	. 05	.60	.05	.01	. 31	1	+	.07	+	10.	+	1	.09	1 11	1.30
																																_

### U. S. DEPARTMENT OF AGRICULTURE.

ANNUAL SUMMARY, 1898

### ILLINOIS SECTION

OF THE

# CLIMATE AND CROP SERVICE

OF THE

## WEATHER BUREAU.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE.

UNDER DIRECTION OF

WILLIS L. MOORE

CHIEF OF WEATHER BUREAU

EY

CHARLES E. LINNEY

SECTION DIRECTOR.





U S. DEPARTMENT OF AGRICULTURE,

# CLIMATE AND CROP SERVICE

OF THE

## WEATHER BUREAU.

CENTRAL OFFICE: WASHINGTON, D. C.

ILLINOIS SECTION. CHARLES E. LINNEY, Section Director, CHICAGO, ILL.

VOL. 3.

CHICAGO, ILL.

ANNUAL.

The greatest monthly precipitation at any station was 14.16 inches at Cobden in March; the least 0.33 of an inch at Lanark in December.

The greatest rainfall in any 24 hours during the year was 6.50 inches at Cambridge in the cloud burst which flooded that region on the 22d and 23d of June.

Compared with 1897 the warmest day of 1898 was 3° cooler, the coldest day nearly 14° warmer, and the range in temperature only 118° to 136° in 1897, it will thus be seen that it was not a year of great extremes in temperature.

One noteworthy thing about the rainfall of the year was the large amount received during the fall months, causing excellent fall pastures and keeping late corn growing until it matured, even though sown after the beginning of June, as some of it was.

The temperature of the year averaged 52.1°, which is about a half degree above the normal temperature, as determined on page 6. It is practically the same average as that of the year 1897, and slightly below that of 1896. January, March and September were the months of marked warmth for the year, January exceeding the normal nearly six degrees and March nearly five, while April and December were the months of marked cold, the latter falling nearly four degrees below the normal; December of 1897 was also a month of marked deficiency.

The greatest heat of the summer was quite evenly distributed in July and August, the average highest of both reaching 96°; the highest actually recorded was 102° at Alexander on the 24th of July and at Atwood on the 2d of September. Temperatures of 100° and 101° were also recorded at several stations, some on the 19th of July, others on the 24th and 28th of July and the 22d of August. The 23d of August, although it did not give the highest temperature of the year, still gave the highest daily mean temperature reaching 83°, and the heat period from the 21st to 26th of August caused much suffering.

The greatest cold of the year was experienced during the first three days of February, although the south half of the also begun with large yield; broomcorn was planted; garden state had its greatest cold on the 14th of December; the 9th truck and small fruits were plentiful.

of the latter month also proved a very cold day over the state as a whole. The lowest temperature recorded was minus 16° at Scales Mound on the morning of the 1st of February; minus 15 were also recorded at Zion and Chemung on the same morning, and the average temperature of the state for that day fell to 7.5°.

Frosts in the spring practically ended with the sharp and general freeze on the 7th of April, although frosts prevailed over the northern district until the 21st of that month, and a few reported killing frosts from the 4th to 6th of May. In the fall frosts did not become severe until the 15th of October, thus giving a very long season free from frost and no serious damage occurred from this source.

The precipitation of the year reached the large amount of 46.64 inches which is about 9.40 inches above the normal, and the greatest fall since 1883. It was well distributed throughout the year, although the first half received the greatest excess. March was the wettest month, averaging 7.29 inches, May next with nearly six inches; December was the driest with an average of 1.38 inches, February next with an average of 2.02 inches.

The greatest amount of precipitation measured within the state was 64.68 inches at Cobden, and the least 27.41 inches at Ft. Sheridan, the shore of Lake Michigan having a comparatively dry year.

The snowfall for the year averaged 27.7 inches, which is 3.3 inches in excess of that 1897 and somewhat above the normal. The northern district reached the large average of 47.9 inches.

There were 114 days with 01, of inch or more precipitation, also 142 clear, 103 partly cloudy and 120 cloudy days during the year, a record of 16 more days with precipitation than in 1897.

The prevailing wind direction was SW., with a total movement of 84,564 miles or 9.7 miles per hour, slightly higher than the previous year. The highest velocity was 76 miles per hour from the S. at Chicago on the 7th of November. The pressure of the atmosphere averaged 30.04 inches, which is .02 of an inch below that of '97 and about that of '94, '95 and '96. The highest pressure recorded was 30.96 inches at Hannibal on the 9th of December, the lowest 29.19 inches at Olney on the 22d of January.

Note. —The following corrections should be made on page 9: December precipitation at Coatsburg 1.53, annual 51.26; December precipitation at Mt Vernon 2.12, annual 56.90; December precipitation at St. John 2.87, annual 49.19, the latter also on page 5; and on page 6 the temperature for Palestine in December should be 29.6°.

#### The Crop Season of 1898.

At the beginning of April winter wheat, rye and clover were generally in good condition, although some wheat and clover were reported killed; grasses, generally, were in splendid condition; fruits escaped serious damage.

Little damage, beyond delay, resulted from the sharp frosts of the 5th to 7th of April and marked activity followed; oats seeding was rapidly finished, also early potato

planting, gardening and plowing for corn

By the 15th of May about one-half of the corn crop was planted; early fruits were coming to market; wheat, rye, oats and grasses were in fine condition. The last half of May proved too wet, thus corn planting and replanting continued until the middle of June, with cultivation general in early fields.

Wheat harvest was general over the state by the 25th of June to the 1st of July, with fair yield; clover cutting was

CONTINUED ON PAGE 4.

## List of Voluntary Observers. Stations. Observers. Observers. Stations. Cen. Dis. Con. Northern Dis. Dr. J. R. Lambert. Prof. R. W. Sharpe. Prof. J. H. Coonradt. Alferd Fitch. R. C. Goodrich. Emily R. Gray. R. L. Anderson. & Gen. J. M. Ruggles. P. J. Edwards. Fred Z. Gosewisch. & Juo. S. Campbell. Wm. Stickler. F. C. Foster. J. B. Sheapley. Jos. Withington. Harry Grundy. Z. K. Wood. John E. Templeton. Coatsburg ... Ashton..... Ira R. George. Anrora.... Dr. M. M. Robbins. Anrora.... Chas. A. Love. Cambridge... S. B. Randall. Danville .... Decatur. .... Effingham.... Chemung Jos. Kuhles. CHICAGO Cordova D. Zimmerman. Davenport, la Dixon J. S. Linnerman. Dubnque, la E. H. Bowic @ Drof. G. W. Horton. Elgin J. S. Dumser. Ft. Sheridan Gelenwood Clark Hojbrook. Henry Post Smgcon U. S. A. Prof. F U. White Glenwood Clark Hojbrook. Hospital E. HI. Hospital J. Hi. Hospital E. HI. Hospital E. HI. Hospital E. HI. Hospital E. Geo. Stevens. Grafton .... Griggsville ... Hannibal, Mo. Hayana..... Hillsboro.... Keokuk, Ia... La Harpe ... Lexington ... Lexington Loami Martinsville Mattoon Morrisonville Mt. Pulaski Palestine Pana Paris Peoria Philo Rautoul Robinson Springfield Sullivan Tuscola Winchester John E. Templeton. C. W. Sibley, The Beacon Co. Kankakee F. E. Bellamy, Kishwaukee Geo. Stevens, Knoxville C. N. Butt. LaGrange Prof. F. E. Sanford, Lanark M. N. Wertz. Martinton Fred S Moore. Minonk O. M. Davison, Monmouth D. J. Strang, Morgan Park Prof. W. H. Runyan, Oswego J. J. S. Seely, Ottawa Dr. J. O. Harris, Reynolds Thos. C. Lewis, Riley John West James, Rockford Hosmer C. Porter, Round Grove St. Charles S. L. Adams, Savanna W. W. Gillispie, Scales Mound, Streator Rowell Dow, Tiskilwa W. I. Greeley, Walnut O C. Nussle The Beacon Co. Dr. Fred Brendel. II. A. Burr, II. B. Clurk. A. P. Woodworth. John Craig. @ Prof. J. L. Hughes. E. W. Lester. George Hurd. Southern Dis. Reynolds, Thos. C. Lewis. Riley. John West James, Roekford. Hosmer C. Porter. R. A. Hawley. Savanna. W. W. Gillispie. Scales Mound. Streator R. Williams. Sycamore. R. Williams. Sycamore. Waluut O. C. Nussle. Wheaton Wm. II Johnson. Winnebago. Frank Osborn. B. F. Michels. P. H. Smyth.@ Wm. Rogan. Frank. A. Gallon. W. H. Mix. John Buck. Dr. L. W. Gordon. H. C. Michels. V. E. Majors. Albion ..... Cairo Carlyle Chester Cisne Cobden Cobden. .... . Equality ..... Condent John July Cordon Flora II. C. Michels, Friend Grove, Grayville John B. Starkey. Greenville Prof. M. S. Oudyn. Halfway E. L. Heam. Hallidayboro, E. E. Thornton. McLeansboro. John Judd. Mascoutah Dr. G. Leibrock. Mt. Carmel Mrs. H. M. Phillips. Mt. Vernon J. F. Bogan. New Burnside George Harris. Olney. Victor E. Phillips. Plum Hill J. A. Chesney. Raum. J. C. Sylvester. St. Louis, Mo. Tilden. Jas. A. Caldwell. Central Dis. Alexander ... George II. Hall. Astoria ... Ed. V. Bohl. Atwood ... W. E. Means. Atwood ... J. W. C. Gray. Beardstown ... Richard Milner. Beardstown.. Bloomington. Bushnell.... Carlinville... Carrollton... Charleston... Prof. M. P. Lackla O. W. Seeley R. O. Purviance, Prof. Clyde Slone, Jacob B. Dazey. Lackland.

@. U. S. Weather Bureau Stations.

Barometer and Wind Table.

			Barome	ter.				Wind	ι.	
Stations.						ve-	bour-	Maxi	imum eit	velo-
Stations.	Mean.	Highest.	Date.	Lowest.	Date.	Total move-	Average ly.	Miles.	Direc- tion.	Date.
Bloomington Cairo Chicago, Davenport. bubuque Galva. Grayville .d. Hannibal Keokuk Kishwaukee Minonk Olney Oswego Robinson a St. Louis Springfield Averages	30.06 30.06 30.04 30.01 30.02 30.04 30.03 30.03 30.02 30.02 30.02 30.06 30.04	30.89 30.86 30.82 30.89 30.89 30.55 30.96 30.95 30.95 30.95 30.82 30.68 30.87 30.87	Dec 9 Dec 9 Dec 9 Dec 9 Dec 9 Dec 9 Dec 9 Dec 9 Dec 9 Dec 9 Dec 9 Dec 9 Dec 9 Dec 9 Dec 9 Dec 9 Dec 9 Dec 9	29.31 29.36 29.29 29.30 29.30 29.33 29.23 29.29 38 29.30 29.19 29.28 29.20 29.36 29.25	Jan 22 Jan 22 Jan 22 Nov 21 Nov 21 Jan 25 Jan 25 Jan 25 Jan 25 Jan 22 Jan 22 Jan 22 Jan 22 Jan 22	74, 869 152, 474 66, 369 64, 954 82, 922 68, 536 86, 574 81, 612	8.6 17.4 7.6 7.3  9.4 7.8  9.9 9.3	56 76 41 56 44 48 66 36	sw. s. mw. nw.	Jan 222 Nov 7 May18 July1 Nov 7 May18

a, b, e, etc. number of months missing.

## The Crop Season of 1898 [Concluded.]

Oats harvest was general by the 10th to the 15th of July, with poor results; wheat and rye harvest was finished; early

corn was tasseling, and having was well advanced, with large yield. Threshing became general during the last half of the month; corn advanced rapidly to the roasting ear stage, some damage resulting from dryness.

Stubble plowing began about the 20th of August; threshing continued. The first of Sept. found much of the early corn ready to cut and work was general by the 10th, broomcorn having largely been harvested; seed clover was also ready to cut, along with hemp, stock peas, sorghum and millet; and pastures, owing to good rains, were exceptionally good.

Fall seeding of wheat and rye was general by the 20th of Sept.; corn was beyond frost injury and fall work general. Considerable damage resulted to corn by high winds the last of Sept., husking and cribbing were slow, difficult work, and much poor, moldy and soft corn was found, the crop proving only a fair one.

Wheat seeding continued until the middle of October, the early sown growing finely, and the crop entered the winter in splendid condition. The temperature of the crop season averaged nearly normal, the rainfall largely in excess.

Forecast Display Stations.

	Porecast Dispra	ty Stations.	
Stations.	Displaymen.	St dions.	Displaymen.
Alton	Daily Republican. The Postmaster.	Newton	W. H. Lathrop. J. H. Young.
Atkinson	Hawks & Helton	Olney	John Schmid.
Atwood8	C. B. & O. R. R.	£144	W. I. Harris,
Bath	The Postmaster.	Palmyra	W. I. Harris, The Transcript. The Beacon.
Beardstown51	Evening Star. Geo. Bastain.	L skiller	New York Store.
Reechwood	C. A Rurks	Peoria +	T. P. & W. R. R.
Bethalto	C. A. Burks. J. T. Ewan.	Pittsfield11	Ed. D. Glanton.
Cairo30	Weather Bureau.	Polo1	The Postmaster.
Carbondale 46	Republican Free-Pre The Enquirer.	Princeton16 Putnam	L. E. & St. L. R. O. P. Carroll
Carlinville 19	John A. Martin.	Quancy	O. P. Carroll, J. Stern & Son.
Carmi10		Robinson43	The Postmaster.
Champaign33	Jos. Kuhn & Son.	Rochelle	Hamfin & McHenry
Charleston	Jos. Kuhn & Son. The Daily News. Central Office. H. M. Merten.	Rockford 17 St. Louis	Postal Tel Co. Weather Bureau.
Chicago	H M Morton	St. Louis	Wabash R. R.
Chicago	The Bulletin.	Salem14	II. C. Feltman.
Cliutou20	Perry Hughes,	seneca	Walter Jones.
Cobden ,	John Buck. D. T. Mitchell. D. Zimmerman.	Springfield30 Streator50	Weather Bureau D. Heenan & Co.
Colfax1	D. T. MRChell,	Stockton18	The Postmaster.
Cordova 4	Schmitt & Co.	Urbaua	University of III.
Davenport	Weather Bureau.	Vaudalia	Jos. Urbani
Decatur80	The Postmaster.	Waterloo33	Waterloo Mill Co. The Journal.
Diamond Lake	E. J. Sabin.		The Postmaster.
Dixon	Evening Telegram. Weather Bureau.	Woo.,.	J. M. Grimes.
E. Dubnque	C. W. Liek.	11 00.2.	11° TO 700
Effingham33	H. Wiechelman,	Adair	W. F. Throckmert'n F. E. Pinkerton.
Elgin	Elk Drug Co.	Clint. n	Geo. Stevens.
El Paso	the Dany Jonnal. Weather Bureau.	Harvey	Fred. S. Moore.
Evansville22 Freeport33	Enmert & Burrell.	Martinten19	The Fostmaster.
Forrest19	Joseph Pool		
Gillespie	Al. G. Kimball. August Dreifns.	Cold Waves" and	
Gilman 7	August Dreims.	Frost Warnings Ouly.	
Grayville12 Greeuville20	Prof. M. S. Oudyn. Weather Burean.	Aledo	J. W. Edwards.
Hannibal	Weather Bnrean.	Aurora	J. W. Edwards. City Marshal. G. W. Suesbury.
Hospital1	E. III. Asylum.	Belle Rive	G. W. Suesbury. The Postmaster.
Indianapolis15	I. D. & W. R. R.	Crescent City	B. Broderick.
JohetI	F. E. Bellamy.	Fairbury	Wade Bros.
Keithsburg	I. D. & W. R. R. Joliet Ptg. Co. F. E. Bellamy. City Marshal.	Good Hope	J. B. Knhn.
Кеокик	Weather Bureau.	Griggsville	S. E. Grav. E. E. Megram.
Kewaunee33 Kinunundy26	Geo. A. Authony, The Postmaster.	La Grange	F E Sanford
La Harpe19	Judd Hartzell.	Makanda	F. Hopkins.
Leland10	The Postmaster.	Normal Park Prairie City	F. Hopkins, W. S. Jackman, F. H. Mead.
Lexington	Wm. Stickler.	*	Z. Zz. Menta.
Lincoln4	Saml, L. Wallace.	Cold Waves and	
Marseilles27	. v. A. Nicholson.	Heavy Snows.	
Martinsville 18 Minonk 25	S. A. Fasig. M. H. Pfaffle.	Bloomington	City Ry. Co.
Monticello32	The Republican	Champaign	Ur. & Chain, Ry.
Morris	E. V. Pierce.	Lincoln	Street Ry. Co. Electric Ry. Co.
Morrison Mt. Carroll6	1. S. Green.	Mattoon	P. D. & E. R. R
Mt. Carroll	W. R. Hostetter.	Peoria	Central Ry. Co.
Mt. Carroll54	J. E. Bogan.	Quincy	Quincy Ry. Co. Centralia & C. R.
New Burnside5	E. V. Pierce.  J. S. Green. W. R. Hostetter. H. E. Cole. J. F. Bogan. Geo. Harris.	Terre Haute	Vandalia R. R.
E William & William	-bonof alesan	ad moth formar to the	Ilmond ili e il condi
["Figures indicate nui	nner of places suppli	ed with forecasts. +Ra	nroad distribution.

Climatole	ogical data	for the	Year 1803.

				Cl	imat	ological	data	for the	Year	1803.										
			Т	emper	ature	(degrees I	Fahren	heit).		Pr	ecipitat	ion (i	iches)					Sky.		D of
Stations.	Countles.	Elevation, feet.	Length of record, years.	Annual mean.	Highest.	Date.	Lowest.	Date.	Length of record, years.	Total for the year.	Greatest monthly.	Month.	Least monthly.	Month.	Total snowfall.	Number rainy days.	Number clear days.	Number partly cloudy days.	Number cloudy days.	Prevailing direction wind.
NORTHERN DISTRICT.  ASILON. AUTOTA. Cambridge. Chemung. CHICAGO Davenport.la. Dixon. Dabuque, Ia. Dwight. Elgin. Ht. Sheridan. Galva. Henry. Hospital. Joliet. Kishwaukee. knoxville. LaGrange. Lanark. Martinton. Minonk. Mommouth. Oswego. Ottawa. Reynolds. Riley. Reckford. Round Grove. St. Charles. Seales Mound. Streator Syeamore. Tiskilwa. Walnut. Wheaton. Winnebago. Averages.	Lee *1 Kane. Henry. McHenry. COOK Seott Lee. Dubuque. Livingston Kane. Lakc Henry. Marshall. § Kankakee. § Will Winnebago. § Knox Cook. Carroll Iroquois. Woodford Warren Kendall. *1 LaSalle. Rock Island McHenry. Winnebago Whiteside. Kane. *1 Jo Daviess LaSalle. § De Kalb Bureau. Bureau. Bureag. *3 Winnebago.	830 676 824 820 824 613 725 651 667 800 650 541 810 775 657 883 745 756 700 800 956 773 700 800 956 775 700 800 956 775 700 800 976 775 775 775 775 775 775 775 775 775 7	4 20 6 6 5 28 28 9 25 8 1 13 6 6 1 7 7 7 4 9 7 9 11 1 5 16 19 12 3 3 3 3 7 2 4 4 4 6 6 18 4 7 7 4 1 1	48.6 49.1 49.6 40.2 50.1 48.7 47.9 48.2 47.9 50.4 46.1 49.9 51.0 49.9 50.1 47.9 40.2 49.3 47.6 49.4 49.4 49.4 49.4 49.4 49.4 49.4 49	96 98 99 99 99 99 95 99 99 95 99 99 95 99 99	July 19 July 24 July 19 July 19 July 19 July 19 July 19 July 19 July 24 July 29 July 29 July 24 July 19 July 24 July 19 July 19 July 19 July 24 July 19 July 24 July 19 July 24 July 19 July 1	-10 -10 -10 -10 -10 -10 -10 -10 -8 -9 -10 -10 -8 -11 -8 -6 -6 -8 -11 -10 -10 -10 -5 -9 -13 -9 -13 -9 -11 -14 -10 -9	Feb. 2  3 3  3 1 11  6 2 1  7 6 2 3 1  7 7 7 8 1  8 1 1 1  8 3 3  8 1 1  8 3 3  8 1 1  8 3 3  8 1 1  8 3 3  8 1 1  8 3 1  8 1 1  8 3 1  8 1 1	4 5 18 16 7 6 25	38. 35 46. 65 50. 36 39. 66 33. 77 3*.95 35. 53 35. 48 42. 05 44. 43 44. 96 44. 43 44. 12 32. 53 44. 12 32. 53 44. 12 32. 53 44. 45 40. 49 49. 01 38. 41 38. 65 36. 01 38. 41 38. 62 42. 59 36. 01 38. 23 39. 39 39. 39	8.61 5.86 9.88 5.97 6.73 6.447 6.64 8.23 3.13 9.86 7.10 7.69 8.23 6.92 7.23 5.50 6.72 7.78 7.74 6.84 7.74 6.84 7.74 6.84 7.75 6.84 7.77 6.85 7.77 6.86 7.77 6.87 7.77 6.97 7.77 7.77 6.97 7.77 7.77 6.97 7.77	Jun Jun Jun Jun May Aug May Mar Jun	0.50 0.76  0.54 1.03 0.41 0.62 0.80 1.09	Dec July Dec " July Feb Apr Dec July Dec Apr Dec July Dec Apr Dec Apr Dec Apr Dec Apr Dec Apr Dec Apr Dec Apr Dec Apr Dec Dec Suly Dec Apr Dec Dec Suly Dec Suly Dec Suly Dec Suly Dec Suly Dec Suly Dec Suly Dec Suly Dec	44.3 44.5 48.5 36.2 23.3 43.5 48.6 40.1 36.2 52.2	133 128 100 113 133 137 124 98 118 90 123 110 101 101 102 111 126 130 102 111 126 130 123 137 144 155 165 176 176 176 176 176 176 176 176 176 176	150 121 79 123 153 153 163 196 157 127 165 178 178 163 126 130 132 149 152 149 152 119 155 81 126 139 149 159 149 159 149 159 149 159 169 169 179 179 179 179 179 179 179 179 179 17	122 118 8 184 4 64 4 106 82 38 110 144 104 104 104 107 107 107 107 107 107 107 107 107 107	93 126 102 178 106 147 131 198 94 96 93 154 123 112 108 75 71 1180 106 1151 1180 106 1151 1180 106 91 1181 1180 1181 1180 1181 1181 1181 1	S.SW S. SW. W. De. SW. S. N. W. SW. SW. SW. SW. SW. SW. SW. SW. SW.
eentral district.  Alexander Atwood.  Bloomington Carlinville Carrollto 1. Charleston. Coatsburg. Dauville Decatur. Effingham Griggsville Hannibal, Mo. Havana Hillsboro. Keokuk, Ia. LaHarpe Lexington Martinsville Mattoon. Xorrisonville Mt. Pulaski Palestine. Paris Peoria Philo. Rantoul Robinson. Springfield Tuseola. Winchester. Averages	McLean Clark Coles. Coles. Christian Logan. Crawford Edgar Peoria Champaign Champaign Crawford \$\$^{\$}	670 665 840 663 660 720 763 613 685 690 650 534 475 676 613 700 800 600 510 731 738 685 900 600 519 700 600 519 700 600 614 604	6 14 7 7 8 13 10 7 7 7 7 7 7 4 4 4 12 18 8 3 11 17 7 7 4 14 7 3 17 6 1 1	53.8 52.8 52.7 53.8 53.3 53.2 54.8 53.4 53.4 54.3 53.4 53.4 53.5 53.4 53.5 53.5 53.6 53.7 54.3 53.8 53.2 52.6 53.7 53.8 53.2 53.6 53.7 53.8 53.6 53.7 53.8 53.7 53.8 53.6 53.7 53.8 53.8 53.6 53.7 53.8 53.8 53.6 53.7 53.8	102 102 98 96 95 98 99 97 95 96 96 96 96 98 100 95 101 99 98 99 99 98	July 24	7 - 4 - 1 - 1 - 1 - 7 - 4 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	Dec. 14 Feb. 3 Dec. 14 14 14 15 16 16 16 17 17 18 18 18 18 18 18 18 18 18 18 18 18 18	7 14 4 28 20 4 12 19 4 10 17 7 7 7 7 3 13 19 19 19	44. 58 59. 93 48. 77 51. 11 47. 81 43. 02 51. 26 46. 33 47. 91 55. 35 53. 14 47. 61 45. 10 51. 20 47. 61 49. 10 49.  5.83 10.89 9.42 7.58 7.33 8.90 8.89 7.93 9.85 7.63 7.78 8.30 6.69 9.64 7.15 9.14 9.90 11.45 8.31 6.05 8.71 7.28 8.34 8.34 8.34 8.35 8.31 8.36 8.37 8.36 8.37 8.36 8.37 8.37 8.37 8.38 8.37 8.37 8.38 8.37 8.38 8.37 8.38 8.37 8.38 8.37 8.38 8.37 8.38 8.37 8.38 8.37 8.38 8.37 8.38 8.37 8.38 8.37 8.38 8.37 8.38 8.38	May Mar May Mar May Mar Sep Mar Mar May Mar Mar Mar Mar Mar Mar Mar Mar Mar Mar	1.58 2.02 0.56 1.56 1.37 0.47 1.28 1.76 1.73 1.83	Dee Feb Dee 1 eb Dee	12.8 21.4 17.5 22.5 10.0 26.2 35.7 9.5 12.3 12.3 12.7 8.6 19.5 13.5 20.5 13.1 9.3 8.2 13.3	127 96 97 130 97 134 120 118 94 127 134 113 92 127 134 113 113 113 113 113 113 113 113 113	128 121 165 164 124 124 181 191 175 202 137 175 202 180 186 167 175 182 180 186 126 127 127 128 129 129 129 129 129 129 129 129 129 129	116 71 93 95 141 61 44 101 55 72 120 93 103 103 107 95 92 92 127 117 1123 1029 88 134 149 99 99 99 99	121 173 107 108 126 100 01 23 130 00 11 127 66 105 91 108 120 82 72 107 107 107 112 132 126 100 112 112 112 112 112 112 113 112 113 113	W. S. S. SW. SW. SW. SW. SW. SW. SW. SW.	
SOUTHERN DISTRICT.  Albion	Edwards Alexander Wayne Union Gallatin \$ Wabash *4 White Bond Jaekson *5 Ilamilton St. Clair Jefferson Johnson Richland Wa shington Pope Sperry St. Louis Randolph state	520 359 450 656 380 480 431 635 400 462 571 500 487 550 550 550 550 550 550 550	7 28 6 15 1 4 2 21 17 17 4 4 11 10 28 12 10 28	56.0 58.8 55.3 56.8 58.1 58.4 54.2 57.6 54.9 54.9 57.7 55.4 57.1 57.0 56.1 56.4 56.4		Sept 4 July 2 Sept 3 Sept 3 Sept 2 July 24 July 2 July 24 Sept 2 July 24 Sept 2 July 24 Sept 4 July 24 July 24 July 24 July 24 Sept 4 July 23 July 23 July 23	2 3 -6 -4 -3 -10 -7 0 -4 -7 2 -4 -3 -10 -3 -10 -3 -10 -3 -10 -3 -10 -3 -3 -10 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3	Dee. 11 14	4 9 19 25 9 28 12	5569 48.66 56.64 64.68 43.75 50.77 51.34 52.39 53.12 51.99 57.46 56.90 4967 48.44 57.59 52.03 48.84 49.30 56.92 53.83 46.64	12.39 9.20 11.99 14.16 9.29 11.38 11.37 9.44 11.11 11.33 11.91 8.51 10.97 13.05 8.93 9.98 8.55 9.95 11.22 8.57	Mar Mar Mar Mar May Mar	1.18 1.20 1.37 1.10 1.83 1.60 1.47 1.20 1.26 1.48 1.60 0.99 1.10 1.79 1.25 1.17 0.83	Dec. Dec. Dec. Peb. Nov. Dec. Nov. Dec. Nov. Dec. Peb. Nov. Jun. Dec. Feb. Nov. Dec. Feb. Nov. Dec. Dec. Nov. Dec. Dec. Nov. Dec. Dec. Dec. Dec. Dec. Dec. Dec. Dec	5.0 7.0 9.0 3.5 5.5 9.2 10.0 3.2 13.1 4.6 5.6 4.3 9.5 8.6 6.5	103 132 133 166 167 169 129 100 118 118 110 117 115 116 117 117 117 117 117 117 117 117 117	170 167 190 266 162 213 149 106 154 86 71 1196 158 121 168 101 133 173 149 142	89 155 67 79 115 85 92 119 64 152 140 48 70 126 89 91 1138 106 76 100	106 103 108 80 88 67 124 140 147 127 154 121 137 115 155 9 126 149 149 140 140 141 140 140 140 140 140 140 140	SW. S. S. SW. Se. SW. SW. SW. SW. SW. SW. SW. SW. SW. SW

Note,—Unless otherwise indicated the highest, lowest and mean temperatures are from maximum and minimum thermometers. In given the temperature from observed readings. In Mean temperature from 7+2+9+9+4: 2. 8 a + 8 p + 2: 3. 7 a + 7 p + 2: 4. 6 a + 6 p + 2: 5. 7 a + 2 p + 2. + Same temperature occurred to more than one day. § Partly estimated readings. | Report incomplete.

Monthly and annual mean temperatures for the Year 1898, with departures from the Normal.

	1	Mont	hly a	and	annu	al me	an temp	eratu	ies f	or th	e <b>Y</b> e	ar 18	898, t	with	depa	rtur	es fro	om t	he No	orms	al.				
	Jan	nuary.	Feb	ruary	. Ma	rch.	April.	М	ay.	Ju	ne.	Ju	ıly.	Aug	ust.	Septe	mber	Octo	ober.	Nov	ember	Decei	nber.	Ann	ual.
Stations.	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.	Temperature. Departure.	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.	Temperature.	Departure.	Тетрегатиге.	Departure.	Temperature.	Departure.
Rockford Round Grove St. Charles St. Charles St. Charles St. Charles St. Charles St. Charles St. Charles St. Charles St. Charles St. Charles Streator Streator Streator Streator Streator Streator Streator Streator Streator Streator Averages CENTRAL DISTRICT Alexander Atwood Streator	25. 0 25. 8 27. 4 28. 6 22. 4 28. 6 26. 3 24. 8 27. 4 28. 6 27. 24. 2 24. 2 24. 2 25. 2 26. 7 22. 8 27. 0 29. 6 27. 1 22. 2 27. 6 26. 3 24. 1 22. 2 27. 6 27. 1 22. 2 27. 6 27. 1 22. 2 27. 6 27. 1 22. 2 27. 6 27. 1 22. 2 27. 6 27. 1 22. 2 27. 6 27. 1 22. 2 27. 6 27. 1 22. 2 27. 6 27. 1 22. 2 27. 6 27. 1 22. 2 27. 6 27. 2 27	+ 2.7.2.9.2.2.2.3.3.5.6.4.4.4.6.5.6.4.4.3.2.9.3.6.6.4.4.4.5.3.2.6.2.6.1.3.7.8.4.4.6.5.6.4.4.4.5.3.2.6.2.6.1.3.7.8.4.4.6.5.6.4.4.4.5.3.2.6.2.6.2.6.2.6.2.6.2.6.2.6.2.6.2.6.2	24.5 25.0 27.0 21.9 27.0 24.1 27.9 24.1 27.9 24.1 27.9 24.1 27.9 24.1 24.1 27.9 24.1 24.1 25.5 26.3 27.7 28.7 28.7 28.7 28.7 28.7 28.7 28.7	+ 0.3 3 3 4 1 2 2 0 0 1 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	38.6 44.0 4 40.4 40.4 40.4 41.0 38.9 33.0 33.7 7 41.3 41.0 38.9 37.0 37.0 41.4 41.0 38.0 37.0 37.0 37.0 41.4 41.5 37.0 37.0 37.0 37.0 41.4 41.5 37.0 37.0 37.0 37.0 37.0 37.0 37.0 37.0	+ 6.1 + 6.7 + 4.9 + 4.6 + 6.3 + 4.7 + 4.7 + 4.7 + 4.7 + 4.7 + 4.7 + 6.1 + 4.7 + 6.1 + 4.7 + 6.1 + 4.7 + 6.1 + 4.6 + 6.1	47.2 — 1.9 40.9 — 1.0 48.4 — 3.9 44.4 — 1.2 44.7 — 1.2 44.7 — 1.2 47.6 — 2.4 47.6 — 2.4 48.0 — 1.7 48.0 — 1.7 48.0 — 1.7 48.0 — 1.7 48.0 — 1.7 48.0 — 1.7 48.0 — 2.0 48.0 — 2.0 48.1 — 2.0 48.0 — 1.7 48.0 — 2.0 48.0 — 2.0 48.0 — 2.0 48.1 — 2.0 49.2 — 3.5 47.4 — 2.8 47.6 — 2.0 47.6 — 3.0 47.6 —	63.1 1 59.0 6 63.6 63.6 63.6 63.6 55.4 662.5 57.8 8 69.8 59.8 65.2 57.0 61.0 55.3 57.4 66.5 65.4 66.6 63.6 63.6 63.6 63.6 63.6 63.6 63	- 2,1 + 0,2 2,5 - 2,5 - 2,5 - 0,0 - 0,7 - 0,2 - 0,3 - 0,0 - 0,1 - 0,2 - 0,3 - 0,0 - 0,1 - 0,2 - 0,3 - 0,0 - 0,3 - 0,0 - 0,3 - 0,0 -	71.3 71.0 63.8 63.8 63.8 72.9 72.6 69.6 67.2 71.1 72.6 67.2 67.0 71.4 69.8 69.8 69.8 69.8 69.8 69.8 69.8 69.8	+ 0.1 1 3 3 - 0.5 6 + 2.1 1 1 - 0.6 6 + 2.1 1 1 - 0.6 6 + 2.1 1 1 - 0.6 6 + 2.1 1 1 - 0.6 6 + 2.1 1 1 - 0.6 6 + 2.1 1 1 - 0.6 6 + 2.1 1 1 - 0.6 6 + 2.1 1 1 - 0.6 6 + 2.1 1 1 - 0.6 6 + 2.2 2 2 1 - 0.6 6 + 2.2 2 2 1 - 0.6 6 + 2.2 2 2 1 - 0.6 6 + 2.2 2 2 1 - 0.6 6 + 2.2 2 2 1 - 0.6 6 + 2.2 2 2 1 - 0.6 6 + 2.2 2 2 1 - 0.6 6 + 2.2 2 2 1 - 0.6 6 + 2.2 2 2 1 - 0.6 6 + 2.2 2 2 1 - 0.6 6 1 -	75.4 71.0 71.2 71.2 73.4 73.4 72.6 75.1 75.8 75.1 71.2 73.4 73.2 75.8 75.1 73.4 73.2 75.8 75.1 75.4 75.2 75.1 75.4 75.2 75.1 75.4 75.2 75.1 75.4 75.4 75.4 75.5 75.1 75.4 75.5 75.1 75.4 75.5 75.1 75.4 75.5 75.1 75.4 75.5 75.1 75.4 75.5 75.1 75.4 75.5 75.1 75.4 75.5 75.1 75.4 75.5 75.5 75.1 75.4 75.5 75.1 75.4 75.5 75.5 75.1 75.4 75.5 75.5 75.1 75.4 75.5 75.5 75.5 75.5 75.5 75.5 75.5	+ 0.5 + 1.3 - 1.4 + 1.3 - 1.4 + 1.5 - 0.2 - 0.2 - 0.2 + 1.5 - 0.2	71.8 72.1 71.5 64.9 71.4 71.5 71.5 72.6 71.2 71.6 72.2 71.6 71.2 71.6 71.2 71.6 71.2 71.6 71.6 71.6 71.6 71.6 71.6 71.6 71.6	- 0.22 + 1.3 + 1.0 - 1.0	65, 7 (0.) 5 (0.	+ 0.17.2.6.6.6.6.6.6.6.6.6.6.6.6.6.6.6.6.6.6.	48.5 49.8 49.8 59.6 49.2 48.5 50.6 49.2 49.4 49.5 50.6 49.2 49.2 49.4 49.4 49.4 49.4 49.4 49.6 49.6 49.6	+ 0.1   - 0.8   - 0.5	33.77 31.63 32.63 33.63 33.63 33.63 33.63 33.64 33.63 33.64 33.63 33.64 33.63 33.64 33.63 33.64 33.63 33.64 33.63 33.64 33.63	- 0.4	21, 8, 23, 2, 23, 7, 21, 19, 0, 21, 3, 21, 22, 10, 21, 3, 21, 22, 10, 21, 21, 21, 21, 21, 21, 21, 21, 21, 21	- 2.6 (- 3.1   - 2.1   - 2.6   - 3.1   - 2.1   - 3.1	43.6 49.1 49.6 49.2 49.2 49.2 48.2 48.2 48.2 48.2 49.3 51.5 51.5 40.1 49.6 49.9 51.5 51.6 49.6 49.9 40.9 40.9 40.9 40.9 40.9 40.9 40.9	+ 1.3 + 1.3 + 0.2 + 0.9 + 0.9 + 0.0 + 0.0 + 1.2 + 0.0 + 0.0 + 1.2 + 0.0 + 1.2 + 0.0 + 1.5 + 1.7 + 0.4 + 0.5 + 1.7 + 0.4 + 0.5 + 0.6 + 0.7 + 0.6 + 0.7 + 0.6 + 0.7 + 0.6 + 0.7 +
Danville Decatur Effingham. Griggsville Hannibal, Mo. Havana Hillsboro Keokuk, Ia. La Harpe Lexington Martinsville Mattoon Morrisonville Dalestine Paris Peoria Philo Rantoul Robinson Springfield Tuscola Winchester Averages SOUTHERN DISTRICT.	32.0 32.0 34.6 31.8 32.2 32.6 33.6 33.6 33.6 33.6 33.6 33.6	+ 6.0 + 7.3 + 7.4 + 6.6 + 6.0 + 6.6 + 4.8 + 3.1 + 4.9 + 3.1 + 5.4 + 5.0 + 6.8 + 7.1 + 6.7 + 6.8 + 6.7 + 6.8 + 6.8	31.4 32.4 31.8 33.7 31.0 33.9 33.8 28.3 29.8 33.6 31.1 32.8 35.0 31.2 29.8 35.0 31.3 31.2 29.8 35.0 31.3 31.2 29.8 35.0 31.3 31.2 29.8 31.6 31.9	+ 1.4 + 4.7 + 3.8 + 5.0 + 3.4 + 1.8 + 0.7 + 1.6 + 2.0 + 2.2 + 2.2 + 2.2 + 1.6 + 1.6 + 2.2 + 2.2	44.9 44.4 43.0 43.0 43.0 43.0 43.0 43.0 43.0 43.0 43.0 43.0 44.0 43.0 44.0 43.0 43.0 43.0 43.0 44.0 43.0 44.0 43.0 43.0 43.0 43.0 43.0 43.0 44.0 43.0 44.0 43.0 44.0 43.0 44.0 43.0 44.0 43.0 44.0 43.0 44.0 43.0 44.0 43.0 44.0 43.0 44.0 44.0 44.0 44.0 44.0 45.0 44.0 44.0 45.0 44.0 45.0 44.0 45.0 44.0 45.0 44.0 45.0 44.0 45.0 44.0 45.0 44.0 45.0 44.0 45.0 44.0 45.0 45.0 44.0 45.0	+ 3.9 + 3.7 + 4.7 + 2.9 + 3.1 + 4.8 + 5.2 + 4.5 + 4.5 + 4.5 + 4.5 + 5.5 + 4.5 + 4.5 + 4.5 + 4.7 + 5.3 + 4.7 + 4.7	55.1 = 3.5 51.9 = 5.3 51.4 = 5.1 51.7 = 2.5 51.8 = 0.4 50.7 = 0.9 50.8 = 3.5 51.8 = 3.5 51.8 = 3.5 51.8 = 3.5 51.8 = 3.5 51.8 = 3.5 50.0 = 4.5 50.0 = 3.2 50.0 = 3.2	62.7 64.5 63.4 63.9 63.4 64.0 62.6 64.0 64.2 61.8 63.3 63.9 61.2 62.9 61.2 62.6 62.6 61.4 63.0	+ I.4 - 0.2 + 0.0 + 1.0 - 2.3 + I.4 + 1.3 - 0.2 - 1.9 - 0.2 - 1.3 + 2.0 - 0.8	75.6 71.0 72.1 71.4 75.3 73.3 75.6 74.9 74.6 72.6 73.0 71.8 74.6 72.6 73.0 74.4 74.4	+ 3.1 + 1.9 + 1.3 + 1.7 + 1.0 + 4.0 + 2.0 + 0.3 + 0.7 + 1.0 0.0 + 1.9 + 2.0 - 0.4 + 1.4	77.1 75.4 74.1 77.2 73.0 74.4 75.2 77.0 77.2 77.4 75.8 77.4 75.6 75.6 75.6 75.6	0.0 - 2.1 - 0.1 - 2.3 + 2.9 + 1.0 - 0.5 - 0.0 - 0.0 + 0.4 - 0.4	75.7 73.0 74.8 74.6 74.0 73.3 75.0 74.5 75.4 73.5 73.4 73.6 74.0 74.0 74.0 74.0 74.0 74.0 74.0	+ 1.2 - 1.0  + 0.7 + 0.4 - 0.4 + 3.1 + 1.3 + 0.2 - 1.0 + 1.1 + 2.8 - 1.0 + 0.3  + 0.3	73.8 03.4 63.4 71.3 63.2 63.0 73.9 63.2 63.6 73.9 63.2 63.6 73.9 63.2 63.6 73.9 63.2 63.6 73.9 63.2	+ 3.8 + 3.5  + 1.7 + 1.7 + 1.3 + 4.1 + 2.8 + 1.1 + 3.3 + 3.4 + 2.7 + 5.0 + 1.9  + 2.6	52. 2 51. 8 50. 8 55. 1 51. 6 52. 6 52. 6 52. 6 52. 8 52. 8 55. 0 52. 4 52. 6 52. 6 52. 6	- 2.5 - 2.3 + 0.7 - 3.0 - 1.8 + 0.6 - 1.5 - 1.1 + 0.3 - 0.9 + 0.9 - 4.0 - 0.6 	35.7 37.6 37.6 37.6 37.6 37.6 37.6 37.6 37	- 0.3 - 0.0 - 1.6 2 - 1.3 - 1.5 - 0.2 - 4.2 0 - 2.9 3 - 1.9 - 1.1 - 0.1 - 1.1 - 0.1 - 0.2 2 - 2.5 - 0.9	25. 2 25. 9 21. 9 30. 1 23. 2 24. 2 27. 4 30. 0 27. 1 23. 3 27. 5 27. 0 31. 2 27. 6 27. 6 27. 8	- 3.8 - 2.3 - 4.6 - 5.3 - 4.9 - 5.5 - 3.6 - 1.1 - 3.7 - 3.0 - 2.4 - 4.9 - 3.6 -	53.0 51.9 51.1 51.3 53.5 52.6 53.2 52.5 52.0 51.7 54.8 53.0 52.1 53.1 53.1 53.2	+ 0.8 - 0.3 + 2.0 + 0.9 + 0.3 + 0.5 + 1.1 + 1.7 - 0.0 - 0.1 
Albion Calro Cisne Cobden Equality Flora Frlend Grove. 4 Grayville Greenville. Hallidayboro. 5 McLeansboro. Mascontah Mt. Vernon New Burnside Olney. Plum Hill Raum. St. John St. Louis, Mo. Tilden. Averages State averages	41.6 36.4 39.6 36.5 37.2 41.1 32.6 39.0 37.9 35.1 35.8 40.4 36.1 37.0 40.8 37.3 37.8	+ 5.0 + 2.2 + 6.8  + 6.4  + 4.1 + 8.0 + 7.3 + 4.4 + 1.5  + 5.1 + 7.3 + 5.3 + 6.0 + 6.4 + 5.9	40.4 36.5 38.2 \$38.1  36.4 39.7 33.0 39.0 37.2 35.0 35.1 38.6 35.6 39.0 35.6 35.0 35.7	+ 1.4 + 1.1 + 0.4  + 1.2 + 1.7 + 2.8 - 1.6  + 1.9 + 4.9 + 4.9	51.2 45.4 49.4 50.7  48.3 51.7 41.0 49.0 49.3 40.5 45.0 51.1 47.4 51.2 48.1 47.2 47.3 48.7	+ 4.2 + 3.2 + 4.1 	55.0 — 3.4 53.3 — 3.0 53.7 — 3.0 53.7 — 3.0 53.8 — 3.0 55.1 — 3.5 55.2 — 3.0 55.2 6 — 4.0 55.3 7 — 5.2 55.3 2 — 5.6 51.8 — 4.0 55.3 2 — 5.6 51.8 — 4.0 53.1 — 3.5 51.3 — 2.0 53.1 — 3.5 53.1 — 3.5	63.3 61.0 67.2 65.0 63.8 65.7 67.7 65.4 64.2 67.8 64.2 67.8 64.4 08.2 63.7 67.1	+ 2.3 - 1.8 - 1.8 - 1.5 + 2.3 - 1.5 + 3.4 + 1.5 + 1.3 - 1.3 + 1.0 + 1.0 + 1.0 + 1.0	73.0 72.6 75.2 75.2 75.8 73.8 77.0 77.0 75.8 75.8 75.4 74.6 77.8 77.8 77.8 77.8 77.8	- 0.0 - 1.5 + 1.6  + 3.3 - 0.9 + 2.9 - 0.1 - 0.4 - 0.2 + 2.0 + 3.0 + 1.5 + 3.0 + 1.5 + 1.9	75.1 75.2 75.8 79.5 79.8 77.3 79.4 77.8 73.6 75.2 77.9 77.8 75.6 75.6 75.6 75.6 75.6 75.6 75.6	- 0.6 - 1.6 - 2.5 - 0.1 + 0.1 + 0.4 - 2.2 - 0.9 - 0.7 - 0.8 - 1.0 - 0.7 - 0.7	75.0 75.2 75.2 75.2 75.2 75.2 75.2 75.2 74.0 77.9 75.1 77.0 75.1 77.0 75.1 77.0 75.4 75.9	+ 1.0 + 1.8 - 0.7 - 0.8 + 0.8 + 1.4 - 0.0 - 1.6 - 0.5 + 0.2 + 0.6 - 0.7 + 1.0 + 0.8 + 0.8	74.2 71.8 72.8 75.1 72.0 71.3 71.2 71.8 73.4 72.0 70.0 74.2 71.8 72.8 73.6 74.0 71.2 73.6 74.2	+ 4.0 + 2.4 + 2.7 + 4.6  + 3.3 + 4.3 + 1.3 + 0.6 + 1.4 + 3.3 + 2.4 + 2.8 + 4.0 + 4.0 + 2.7	57.6 54.0 55.5 57.0 51.4 57.2 52.8 55.8 55.8 55.9 55.9 55.4 55.4 55.5 55.4 55.5 55.4 55.5	- 1.4 - 1.7 - 4.7 - 4.7 - 0.5 - 0.3 + 0.4 - 1.8 - 3.2 - 0.6 - 0.3 + 0.2 - 4.7 - 0.2 - 1.2 - 1.2	45.2 41.8 43.0 43.1 41.9 43.2 39.3 43.0 41.8 41.8 41.8 41.8 41.8 41.8	2 - 1.0 3 - 3.1 5 - 2.8 1 + 0.7 2	35.3 31.4 33.2 35.0 31.2 32.0 33.0 29.4 32.4 32.4 32.4 32.4 32.4 32.4 32.4 32	- 3.0 - 3.4 - 3.5 - 3.7 - 3.6 - 5.1 - 4.4 - 2.3 - 3.4 - 2.3 - 3.4 - 2.3 - 3.4 - 3.6 - 3.6 - 5.1 - 3.6 - 5.1 - 3.6 -	53.8 55.3 55.8 58.1 55.4 58.4 51.2 57.6 51.9 55.4 58.0 57.1 58.0 57.1 55.4	+ 0.8 - 0.1  + 0.4 + 1.5 - 1.6 + 0.7 + 0.9 + 1.4 + 1.7

Norm,—Unless otherwise indicated the mean temperatures are from maximum and minimum thermometers. 1. Mean temperature from 7+2+9+9+4: 2. 8 a 9+2: 3. 7a+7p+2: 4. 6a+6p+2: 5. 7a+2p+2. § Estimated reports. | Reports incomplete, a: Rockford normal; b: Pana normal; c: Palestine normal.

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Ashtou * Aurora. Cambridge. Chemung CHICAGO Davenport (a. Dixon. Dnbuqne, Ia. Dwight Elgin Ft. Sheridan Galva. Glenwood * Henry Hospital Joliet . EKankake * Kishwaukee Knoxville LaGrange Lanark Martinton Minonk Monmouth Oswego * Ottawa Reynolds Riley. Reckford * Scales Mound Streator Sycanore Tiskilwa Walnut. Winnebago Averages CENTRAL DISTRICT Alexander Atwood * Bloomington Carlinville Carrollto 1 Charleston Coatsburg Danville Decatur	555 555 555 555 555 555 555 555 555 55	72	\$2 55 56 66 67 67 77 75 55 56 68 68 68 67 69 66 66 68 68 68 68 67 69 66 68 68 68 68 68 68 68 68 68 68 68 68	10 10 10 10 10 10 10 10 10 10 10 10 10 1	67 64 64 661 662 663 664 665 667 70 70 70 667 72 73 11 77 12 17 70 11 17 17 17 17 17 17 17 17 17 17 17 18 18 18 18 18 18 18 18 18 18 18 18 18	16   16   16   16   27   22   26   16   16   16   16   16   16	81	66 77 66 6 6 77 6 6 6 7 7 6 7 6 7 6 7 6	888 888 888 888 888 888 888 888 888 88	23 24 24 224 221 221 221 221 221	94 2997 992 997 999 999 999 999 999 999 99	7 4 24 25 4 30 30 30 30 30 30 30 30 30 30 30 30 30	200 00 00 00 00 00 00 00 00 00 00 00 00	2 t   24   24   24   24   24   24   24	98 1000 97 97 97 97 97 98 99 95 99 95 99 95 99 96 99 96 99 96 99 96 97 97 97 97 97 97 97 97 97 97 97 97 97	22+ 43 23 23 23 23 22 22+ 22 23 23 23 22 22+ 22 23 23 23 22 22+ 22 23 23 23 23 23 23 23 23 23 23 23 23	90 93 87 90 92 91 91 91 91 91 92 93 93 93 93 93 93 93 93 93 93	2 3 1 1 2 3 2 2 2 2 2 1 1 2 2 2 2 2 1 1 2 2 2 2	7.5.5.79.8.7.7.8.8.2.9.8.1.2.7.7.7.8.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	65 67 67 67 68 68 68 69 68 68 65 69 68 68 65 67 67 69 67 67 68 68 69 68 68 69 68 68 69 68 69 68 69 69 69 69 69 69 69 69 69 69 69 69 69	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	48 47 54 48 46 52 52 46 45 47 55 54 47 55 54 47 55 56 47 57 59 55 45 56 57 59 59 51 51 55 55 55 56 57 57 59 59 51 51 52 52 52 52 52 52 52 52 52 52 52 52 52	999999999999999999999999999999999999999

<sup>\*</sup>Observed readings. + Same temperature occurred on more than one day. O Reports Incomplete. 

# Estimated readings.

Monthly minimum temperatures for the year 1898, with dates.

	Janu					ch.	Ap	rll.	Ма		Jun		Jul				Septe	aber.	Octo	ber.	Noven	ber	Decei	nber.
Stations.	Minimum.	Date.	Minimum.	Date.	Minimum.	Date.	Minimum.	Date.	Minimum.	Date.	Minimum.	Date.	Minimum.	Date.	Minimum.	Date.	Miniranna.	Date.	Minimum.	Pate.	Minimum	Date.	Minimum.	Pate.
Ashton * Aurora (Cambridge Chemung CliftCAGO Davenport, Ia Dixon Dubuque, Ia Dwight Elgin Ft. Sheridan Galva Henry ‡ Hospital † Hospital † Joliet Kishwaukce Knoxville LaGrange Lanark Martinton Minonk Momonuth Oswezo * Ottawa Reynolds Riley Rockford Round Grove St. Charles * Scales Monnd Streator Sycamore.	- 1 5 0 6 4 4 1 1 0 0 5 5 4 4 1 1 0 0 5 5 5 4 1 1 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1	27 24 29 29 24 2 2 31 28 2 2 24 24 24 24 24 24 24 24 24 26 29 29 20 21 21 26 29 20 21 21 21 21 21 21 21 21 21 21 21 21 21	-10 -10 -10 -6 -15 -8 -6 -9 -9 -4 -8 -8 -6 -12 -10 -10 -10 -10 -10 -10 -10 -10 -10 -10	2 2 3 1 1 3 3 3 1 1 1 2 2 3 3 1 1 1 3 3 3 3	11 13 18 3 2 12 10 12 13 13 13 13 13 13 18 13 13 14 14 15 18 18 11 19 9 8 8 11 12 4 12 10 12	3 3 5 5 3 5 5 5 5 3 3 3 5 5 5 5 5 3 4 4 7 3 3 3 3 4 4 3 3 3 3 3 3 3 5 5 4	24 21 22 20 19 24 23 22 21 22 22 21 22 22 23 19 21 21 22 22 22 23 23 21 21 22 22 22 23 23 24 24 23 25 26 27 27 27 27 27 27 27 27 27 27 27 27 27	สลอดตอดตอดตอดตอดตอดตอดตอดตอดตอดตอดตอดตอดตอ	39 39 39 37 37 35 37 37 35 36 36 38 40 36 37 37 36 37 36 37 37 36 37 37 37 37 37 37 37 37 37 37 37 37 37	4 <sup>†</sup> 6 5 6 6 7 7 6 7 6 7 6 7 6 7 6 7 6 7 6 6 7 7 6 6 6 6 6 6 6 7 7 7 6	.55 46 53 48 52 54 48 52 43 47 47 50 48 41 46 47 50 51 44 46 47 7 49 49 49 7 50 45 50 45 50 45 50 45 50 45 50	21 22 22 19, 21 22 2 22 22 22 22 22 22 22 22 22 22 22 2	62 47 75 55 54 44 59 26 50 50 50 53 34 55 55 54 56 56 56 56 56 56 56 56 56 56 56 56 56	104 11 106 100 100 100 100 100 100 100 100	60 49 55 56 52 52 53 49 51 54 51 52 50 52 50 54 52 50 51 52 50 51 52 50 51 51 52 50 51 51 51 51 51 51 51 51 51 51 51 51 51	13 13' 13' 13' 13 13 13 13 13 13 13 13 13 13 13 13 13	48 49 49 40 40 40 40 40 40 40 40 40 40 40 40 40	12 12 17 11 11 12 12 12 12 12 12 12 12 12 12 12	26 22 25 16 30 22 2 25 24 24 25 26 18 21 22 24 24 25 24 24 25 24 25 24 24 25 26 30 25 24 24 24 24 24 24 24 24 24 24 24 24 24	27 27 26 27 26 26 26 26 26 27 15 27 27 27 27 27 27 27 27 27 27 27 27 27	- 2 - 2 - 2 - 1 - 4 - 2 - 2 - 1 - 1 - 4 - 2 - 2 - 1 - 1 - 1 - 2 - 2 - 1 - 1 - 2 - 2	27 27 26 26 27 26 27 26 26 27 26 26 27 26 26 27 27 26 26 27 27 26 26 27 27 26 27 27 26 27 27 26 27 27 26 27 27 26 27 27 27 27 27 27 27 27 27 27 27 27 27	- 6 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2	31 31 31 31 31 31 31 31 31 31 31 4 4 4 4
Walnut Wheaton * Winnebago Averages  CENTRAL DISTRICT.  Alexander Atwood * Bloomington Carlinville Carrollton Charleston Coatsburg Danville Decatur Effingham Griggsville Hannibal, Mo Havana Hillsboro Keokuk, la La Harpe Lexington Martinsville Mattoon Morrisonvillo Mt. Pulaski Palestine Pana Paris Peoria Philo Rantoul Robinson Springfield Tuscola Winchester * Averages	6 5 4 4 3 3 3 6 6 6 7 7 4 4 2 2 2 5 2 6 6 6 8	29 2+ 29 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	-11 - 4 - 4 - 8 - 8 - 2 - 2 - 4 - 4 - 1 - 2 - 2 - 3 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4	3 t 1 1 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	14 18 9 11 20 16 12 22 18 18 18 20 13 18 22 1 25 22 21 12 20 20 20 19 23	4 4 3 3 3 4 4 5 5 3 3 4 † 23 5 5 4 4 23 3 2 2 24 4 3 3 3 3 3 6 6 3 3 † †	23 22 22 21 23 20 20 24 23 24 26 27 24 24 21 22 22 24 21 20 20 25 24 24 25 20 24 24 22 24 24 22 24 24 25 20 24 23	5555 66666655556556556666 556556666	37 39 34 36 41 38 36 39 39 39 39 40 42 43 34 40 42 39 41 40 38 40 40 40 40 40 40 40 40 40 40 40 40 40	4 <sup>†</sup> 7 7 7 6 7 7 6 6 7 7 7 7 6 6 6 5 5 7 7 7 7	50 58 49 51 56 54 47 55 58 8 58 58 58 58 58 58 58 58 58 58 5	20 8 8 20 20 20 20 20 20 20 20 20 20 20 20 20	48 44 44 451 51 450 55 55 55 55 51 49 49 49 49 49 49 49 49 49 49 49 49 49	11	55 55 56 56 56 56 56 56 56 56 56 56 56 5	12 12 12 25 5 5 5 13 13 13 14 4 10 10 11 12 12 13 13 14 15 12 12 13 13 13 15 12 12 13 13 15 5 12 12 13 15 15 12 15 15 15 15 15 15 15 15 15 15 15 15 15	45 46 37 42 45 42 43 46 45 46 45 44 47 48 50 47	7† 12 12 12 12 11 11 18 8 10 8 7 11 18 8 8 10 11 11 8 8 8 11 12 8 8 8 8 8 8 8 8 8 8 8	25, 25, 26, 27, 26, 27, 27, 27, 27, 27, 27, 27, 27, 27, 27	27 27 27 27 26 27 26 27 27 27 27 27 27 27 27 27 27 27 27 27	- 2 3 - 1 1	27 26 26 26 26 27 27 26 26 27 27 26 26 27 27 26 26 27 27 26 26 27 27 26 26 27 27 26 27 27 26 27 27 26 27 27 26 27 27 26 27 27 27 27 27 27 27 27 27 27 27 27 27	- 5 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	31 31 31 31 14 14 14 14 14 14 14 14 14 1
SOUTHERN DISTRICT.  Albion Cairo Cisne Codden. Equality	12 8 8 7 12 3 11 11 11 11 11 11 11 11 11 11 11 11 1	11 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	6 7 5	333333114333333333333333333333333333333	22 28 21 24 26 26 21 25 22 24 17 23 21 26 23 18 27 26 23 18 27 26 27 27 28 28 29 29 20 20 20 20 20 20 20 20 20 20 20 20 20	3 3 2 3 † 5 5 2 † 3 3 3 4 4 4 4 3 3 3 3 3 2 † 23 5 5	26 32 27 27 30 30 24 28 28 30 27 24 29 29 29 29 28 28	66 55 65 55 55 56 66 14 66 66 67 75 55	38 42 45 38 40 42 39 39 40 40 40 36 38 38 38 38 41 41 39	66 66 66 67 66 67 66 66 66 66 66 66 66 6	57 63 54 57 60 59 55 58 57 55 52 55 54 57 61 58 52	1† 20 1 20 20 20 22 20 16 20 20 20 20 20 20 20 20 20 20 20 20 20	53 62 51 53 58 57 56 54 55 50 51 50 52 58 57 57 50 51 58 58	11 12 10 11 11 11 11 11 11 11 11 11 11 11 11	57 62 56 58 60 60 53 64 57 58 53 56 54 59 60 57 63 57 63 55 56	13 4 4 12 13 13 13 13 13 13 15 13 15 13 4 4 4 4 4 4 4 13	47 46 50 48 49 49 45 46 40 44	8 7 7 8 8 8 8 8 7 8 8 8 8 7 8 8 8 8 7 8 8 8 8 7 8 8 8 8 7 8	25 33 25 25 25 25 28 27 25 25 25 25 25 24 25 24 28 24 28 25 24 26 26 26 26 26 26 26 27 27 28 28 28 29 29 29 20 20 20 20 20 20 20 20 20 20 20 20 20	27	10 14 6 14 12 5 14 10 10 10 10 10 12 	27	- 37 - 37 - 37 - 37 - 37 - 37 - 37 - 37	14 14 14 14 14 14 14 14 14 14 14 14 14 1

<sup>\*</sup>Observed readings. + Same temperature occurred on more than one day. 1 Partly estimated readings.

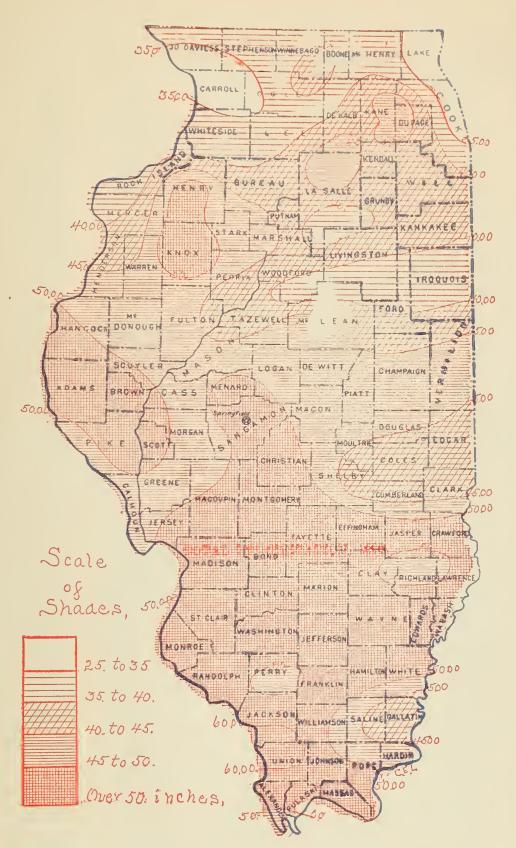
		M	onth	aly ar	id ai	nnual	pre	cipita	tion	for	the 3	Zear :	1899	, with	n de i	artu	res f	rom	the 1	Norm	al.					
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NORTHERN DISTRICT.	<u> </u>										-		F		4	Ω		G	Ā.	Ā	된	Ã	집	Ď	[ ]	De
Ashton	2.69	+0.22	2.1.	+0.38	1.75	+2.01	2.48	+0.03	3.45	-0.03	3.00	-0.31	1,60	-1.16	8.61	+1 72	3,61	+0.50	28:	+1.60	T 45	-0.24		- 20	v	
Ashton	. 5.17	+2.17	3.19	+0.23 $-0.51$	5.65	+3.08	2.84	-1.68 +0.11	4.95	+5.83	5.83	+1.72	1.13	-2.01 $-2.23$	4.63	+1.29	4.29	+1.23	5.30	+2.39	2.92	-0.16	1.17	0.38	30.00	+7.50
CHICAGO	2.8	+0.35	2.73	+0.99	4.2-	+0.67	2.2	-1.70	3.71	+0.20	5.97	+1.73	2.54	-0.67	5,60	+2.81	2.72	-2.39	3, 11	+1.84	2.00	-0.10	0.80	-0.30	39.66	16.83
Dwight	2.10	+0.51	2.01	+0.55	2.75	+0.52	4.06	+1.00	4.47	+0.30	4.36	-0.61	2.83	-1.44	4.37	+1.28	3.07	-1.00	3.86	+1.17	1.19	-0.83	0.70	-1.30	35.48	+4.08
Galva	3.3	+0.33	2.91	+1.09	3.13	+0.92	1.3	-1.85 -0.37	2.43	-1.02	2.56	-1.3G	1.65	-0.53	2.86	+0.41	2.45	-0.66	3.10	+1.16	1.44	0.87	0.91	-0.20 $-0.93$	42.05	12, 21 -3, 25
Ft. Sheridan Galva Glenwood Henry Johet	3.16	+1.01	2.11	-0.19 +0.53	5.05	+2.53	1.5	-1.57 +0.54	3.66	-0.04	3.89	+0.05	3.97	+0.18	4.85	+0.06	3-43	+0.17	4.30	+1.52	2.19	+0.48 -0.25	0.61	-0.91	40.20	17.47 +5.44
Kishwaukec b	1.05	+1.42	2.28	+0.75	6.12	+3.23	1.4-	-0.81	3.82	+0.10	7.89	+4.31	1.59	-0.71	4.69	+1.76	3.20	+0.16	4.53	+2.54	2.61	0.00	2. [5]	-0.21	44.35	12.66
INDXVIIIE	5.3	+3.05	1.86	+0.07	5.90	+3.15	3.85	+0.75	7.94	+4.18	5.02	+1.46	0.97	-2,91	10.15	+5.73	5.60	+1.62	2.74	0.21	1.23	_0.20	0.84	-1.29	41.12	+5.13
Martinton	1.5	+0.06	1.52	+0.17	2.66	+0.09	2.76	+0.75 -1.92 -0.83 -1.35	3.87	-0.62	2.12	-2.39	2.00	-1.64	7.23	+4.51	3.66	+0.82	3.45	+1.29	2.69 I.o*	-0.25 $-0.61$	0.34	-0.40 $-1.47$	44.12	+9.33 -0.59
Minonk	3.2	+1.58	1.78	-0.68 +0.16	5.0	+2.41	2.87	+0.04	6.84	+2.90	2.92	+0.31	0.58	-1.49	4.70	+2.41	5.47	+1.26	3.85	+2.12	2.81	+0.29	1.84	-0.76 $-0.88$	39.89	+5.13
Langark Martinton Minonk Moumouth Ottawa. Oswego Reynolds Riley	3.8=	+1.55	2.59	+0.29	4.11	+1.80	1.48	-1.45 +0.27	5.50	+1.44	4.51	+0.57	2, 23	-0.94	3.75	+0.75	3.81	+0.80	4.32	+1.31	2.81	+0.01	0.47 1.52	-1.26 $-0.47$	44.45	+6.19
																			4.73 3.82	+2.43	1.31	+0.28 $-0.66$	0.50	-0.71 $-1.30$	35.41	13.91
St. Charles	3.01	+0.62	1.82	+0.25	4.42	+0.70	5.11	+1.29	4.19	+0.20	1.1.	3.0.1	- 60		4.00	T0.95	0.60	1./1	3.41	+1.78	1.64	-0.42 +0.01 -0.80	0.54	-1.13 $-0.21$	36.62	+5.37
Scales Mound Streator	2.17	+0.49	1.76	+0.50	2.84	+0.22	2.78	-1.06 +0.15	4.07	-0.67 +2.54	3.19	- 0.69	3.75	-1.04	7.72	+4.29	2.62	-0.36	5.71	+1.30	1.98	+0.07	0.41	-0.55	36.01	+3.70
Streator Sycamore Tiskilwa Walnut	3.28	+1.14	3.57	+1.60	5.42	+3.07	1.6:	-1.78 +0.11	3.2	+3.24	3.47	-1.30	1.22	-2, 25	6.47	+3.80	3.71	+0.79	4.81	+1.92	2.47 1.76	-0.75 $-0.83$	0.77	-1.69	38.23	+6.47
Walnut Wheaton	3.96	+1.43	2.08	+0.51	5. 22	+2.11	2.78	-0.50	5.22	+1.41	3.98	-0.93	1.20	-1.77	5.51	+3.30	4.47	+0.15	2.63	+1.57	1.70	+0.03	0.96	-0.98 $-0.55$	45.38	+7.39 +7.19
Walnut	2.9	+0.79	3.07	+1.28	3.95	+1,0	3.39	+0.11	3.52	-0.47 +1.15	3.65	-0.50 -0.50	2.74	-0.81	7.13	+3.89	2.47	-·I.02	3.80	+1.60	1.81	-1.20 $-0.27$	0.71	-0.70	39.19	+4.43 +4.79
CENTRAL DISTRICT.	V i										43	10.72			31.74	1 4400	. 1	1 01 37	3.09	1 *****3	2.0.	0.25	1.03	0,09	40. og	T0.93
Alexander	4.21	+1.18	2.81	+0.88	5. 25	+2.26	3.15	+0.64	5.83	+1.43	5-14	+0.95	2.28	-2.73 +0.27	3.17	+1.21	5.19	+1.59	3. So	+2.33	2.56	+0.28	1.19	-1.53	44-58	+8.69
tarlinville	1.08	+2.58	1.95	-0.91	7.49	+4.55	4.30	+0.23	7.58	+3.29	3.66	-0.94	3.68	+0.54	2.65	+0.11	5.39	+2.00	4.60	+2.22	2.28	-0.73 $-0.37$	2,16	-0.45	51.11	12.02
Coatsburg	2 71	±1.08	2 26	+0.37	7.00	+3.50	3.59	+0.22	6.63	+2.61	2.79	-2.2b	1.93	-1.05	3.14	+0.22	8 80	+1.49	4.14	+1.64	1.66	-2.43	1.80	-0.47	43.02	+2.30
Danville Decatur	3.66	+c.41	1.79	+0.95	7-93	+4.61	2.47	+0.33	3.98	+2.59	6.37	+2.87	2.21	-1.33	3.89	+1.23	5.17	+0.69	5.06	+2.99	3.05	-1.11	1.86	-1.09	46.33	+8.69
Effingham Grafton	5.90	+1.37	1.05	-0.00	8.01	T7.47	3.18	+0.95	9.03		2.40	+2.92	3.17	-0.57	3.87	+1.81	5.20	+2.84	4.13	+2.09	2.30	-1.16	1.84	-0.40	55-35.	18 95
Griggsville	3.64	+2.21 +2.14	2.19	-0.25 -0.85	5.78	+3.07	4.95	+1.22 +0.14	6.90	+3.30	4.94	+0.33	3.56	+0.53	4.49	+2.43	0.83	+3.15	3.01	+0.86	3.66	+1.18	0.07	-0.83	53.14	16.08
Hayana	4.64	+2.37	2.08	+0.20	4.8.	+1.75	2 90	-0.55	7.63	+3.80	1.58	+0.44	2.49	-2.03	2.78	+0.29	6.92	+2.85	2.55	+0.59	2.24	-0.18	1.45	-0.97	45.10	+8.62
Keokuk, Ia LaHarpe	*. Q1	$\pm 0.831$	1.40	0.53	5. 121	+ 4.44	3.0.1	+1.61	8.50	1 4 + 4/	4.77	+0.29	3.06	-1.49	6.92	+4.13	6.42	+4.44	3.99	+1.37	2.52	-0.56	1.38	-0.50 -2.31	52.48	10.63
Lamie	4.02	+3.00	2.11	→0.88	5.17	+ 2 25	2.13	-0.01	6.00	+1.31	2. 2I	1.6	1.32	-1.05	2.44	-0.60	5.23	±2.75	4.06	+2.55	2.09		1.18	_1.50	38.05	1
Martinsville																										
Morrisonvalle d Mt. Pulasai Palestine	4.78	+2.21	2.74	+0.13	9.9	+3.25	2.92	+0.18	5.04	+1.90	3.71	-1.88 $-0.23$	0.56	-1.35 -3.00	3.38	-0.05 +0.66	5.14	+0.92	5.11	+2.77 $+3.22$	2.26	-0.95 -0.36	1.50	-0.70 $-0.60$	50.22	+7.71 12.87
Paris	4.20	+2.44	1.56	-1.72 -0.68	8.34	+7.55 +5.19	2.41	-0.24 -1.61	3.15	-I.21	3.84	+0.29	2.80	-0.37 $-0.52$	3.31	+1.03	4.71	+4.08	4.61 3.73	+2.31 $+2.31$	3.15	-1.09 $-2.18$	2.33	-0.37	53.97	12 69 +5.21
PhiloRantoul	3.00	1 40.30	3 4 600	1.00	170/2	1 ,1.02	m + (2) 4	0.00	4 . 90)		3.10	0 + 411	1 . 412	4409	2,49	0.04	0. 0	1 31	3.33.	13.13	3.20	0+40	6.23	1 00 10	40.7 0 22.0	10.4.
Robinsone	5-30	+2.41	1.73	-1.551	14.01	II.II	4.84	-1.77 +0.75	4.12	+0.34	4.28	+0.51	1.78 -	-1.39	3.97	+0.71	10.09	+6.75	4.50	+2.20	2.52	-1.72	1.74	-0.90	55.851	17.60
Tuscola	1.49	+3.75	1.63	+0.23	8.86	+5.23	3.74	+0.05	5.12	+2.30	3.93	+0.22	3.78	+0.22	2.61	+0.19	4.82	+0.20	4.41	+3.02	2.60	-0.07 -0.5h	2.78	+0.20	49 39	17.58
	1.42	+1.92	1.96	-0.36	7.64	+4.61	3.57	+0.01	6.19	+1.80	3.99	+0.10	2.59	-1.27	3.44	+0.94	5.86	+2.41	4.06	+2.25	2.59	-0.54	1.56	-0.70	47.87	17.17
Albion	6 00 -	<u></u>	10	-a. 86 1	2 20 -	+8.02	5. 27	+1.46	6.6S =	+1.89	2.25 -	-I.02	5.51	+1.06	3.12	-0.31	3 - 57 -	+0.77	3. 25	+1.44	2, 27	-1.77	1.47	-1.66	55.00	12.25
Cairo	6 2-1-	-2 45	I 187	-2 75	0.2	+5.44	2.1.	-1.75	5.20 "	T 1 - 5.51	1.72 -	-1.75	5.671	±2.21	2.50 -	+0.721	0.11	+ 3.48	4.0.1	+1.89	1.55	-2.07	1.27.	-2.00	13.00	+5.83
Chester	1 2 02		1 02		× 0		2 481		8 40 1		2 711		6 21 .		1 22		3. 33		4 07		1.23		2 221		52.QO	
Cobden	1.2 -	Fo.61	I.37 -	-2,251	4.10 -	1-8.95	4.28	+0.10.	5.70!	+0.01	7.83 -	-1.79	7.35 -	-3.11	4.SI -	+0.94	5.21	+2.31	6.42	+2.80	1.60	-2.71	1.69	-1.95	54.08	14.20
Grayville	PH T		1 20	1.9	1 00		E 200		6 28 .		1 (0		2.01		2 07		2.83		2.21		2.12		1 60		5 I . 3.1	
McLeansboro	4.03	80.1-	I.4 :	-1.60 -2.11.1	7.90 -	+3.35	3.69 -	+1.72	9.44 - 6.05 -	+1.80	4.17	-0.06 -0.15	7.12 -	F4.29	5.29 -	+2.15 +1.27	2.75	0.00	3.77	+1.30	1.26	-2.82	1.69	-1.17	51.90	10.18
Mascoutah	6.53	-0.93	2.8) -	-0.29 I	1.33 -	F7.06	4.21 -	-0.35 +0.15	5.82	+1.89 +1.71	5.62 -	+1.22 +3.99	4.84 -	F1.72 F0.75	5-57 -	+3.03	3.64	+0.22 +0.42	4 · 42 3 · 53	+2.62	2.43	-1.27	2, 21	-0.76 -0.66	56.54	16.02
New Burnside	5.86 +	-2.13	1.6	-0.711	1.91 -	⊦3.22 ·····	3.54 -	+0.31	5.86 T	-1.01	5.28 -	Ho.76	5.82 H	F1.∩1 F0.31	3.18 -	+0.64	4.54 -	+0.97, +1.61	4.41	+2.03 +2.38	0 99	-1.34	2.10	+0.08 (	19.07	11.31
Plum Hill	5.22 +	-2.66	1.95,-	-0.00 1	0.97 -	-5.96 -8.28	5.06 -	+0.13 +0.24	4.35 7 5.12 7	F0.53	5.32	-2.00 -0.73	4.75 H	-1.00	3.58 - 3.98 -	+0.99 +1.17	3.93	+1.52 +0.19	5.34	+3.33	2.29	-1.73	1.79	-1.31	7 - 59	15.00
St. John	7.0; +	-3 · 5 ×	1.25	-2.64	8.93 +	-4.44 ·	4.03 -	+0.21 .	5.17 7 6.06 7	-1.14! -1.69	2.33 -	-1.73 1 -0.78	7.52	-1.31	2.86 -	-1.43 +0.10	3.6 -	+4.45 +1.57	3.06	+0.94	1.17	-2.13 $-2.26$	2.52	+0.35	18.54	11.77
Tilden	4.53 +	2.17	1.7.	-1.23	7.73	14.38	3.85	+0.22 ·	5. 95 T	F1.81	3.85 = 5.00 H	-0.8 -1.05	7.44 1	-3.96	0.87 - 4.85 -	-1.42 +1.48	4.81 -	12.06	6.36	F3.90	1.88	-2.11	1.97 -	-0.45	0.92	16.63
Averages State averages	5 0 1 L	T 02	7	-1 20 1	11.6	-6.00	1 [25]	-n. 18 1	0.5017	-1.95	4.35 -	-O. O1	5,50 +	-2.00	3.50 -	10.95	4.251-	-1.32	11. 25	+2.14	1.91	-1.09	1./5	0.97	3.03	22001
		1	1													1	- 1	- '				*			1	

Estimated readings. The departure where no sign appears is plus. a: (hicago normal; b: Rockford normal; c: Springfield normal; d: Pana normal; e: Palestine normal; f: Mt. Carmel normal.



NOTE.—The following changes should be understood in the voluntary observation stations: Clear Creek just southwest to to Henry; Golconda just north to Raum; Herrin southeast to Halfway; Iron southwest to Equality; Jordans Grove just east to Tilden; Louisville just south to Flora; Zion just southwest to Savanna; also the following additions: Astoria southwest of Havana; Morgan Park just north of Glenwood; Sullivan southwest of Atwood. In the display stations this change should be understood: Assumption just south to Pana; and the following additions: Adair just south of Bushnell; Bement just south of Monticello; East Dubuque just southeast of Dubuque; Gillespie just south of Carlinville; Gilman just north of Paxton; Harvey just north of Glenwood; Morris just east of Seneca.

TOTAL PRECIPITATION, 1898.



## Climate and Crop Correspondents.







